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VOLUME 50, PART 1

Stuart G. Hibben, Editor

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The present volume contains material accessioned between October 1995 and September 1996. It contains full citations of 6843 items, in many cases with abstracts. Indexing for the volume is issued as Volume 50, Part 2.

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Stuart G. Hibben, Head
Cold Regions Bibliography Project
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50-1

Analysis of existing nonhomogeneous periods of observations of snow cover in the Western Caucasus Mountains. [K analizu sushchestvuiushchikh neodnorodnykh periodov nabliudeniĭ za snezhnym pokrovom v gorakh Zapadnogo Kavakza]

Pogorelov, A.V., Izmaĭlov, G.G., Umanskiĭ, I.V., *Sredneaziatskiĭ regional'nyĭ nauchno-issledovatel'skiĭ gidrometeorologicheskiĭ institut. Trudy*, 1991, 140(221), p.3-10, In Russian. 5 refs.

Snow cover, Snow depth, Snow surveys, Caucasus Mountains

50-2

Statistical structure of the snow cover field and a rationalization of snow-measuring operations in the Western Caucasus Mountains. [Statisticheskaia struktura polia snezhnogo pokrova i ratsionalizatsiia snegomernykh rabot v gorakh Zapadnogo Kavkaza]

Pogorelov, A.V., *Sredneaziatskiĭ regional'nyĭ nauchno-issledovatel'skiĭ gidrometeorologicheskiĭ institut. Trudy*, 1991, 140(221), p.10-18, In Russian. 7 refs.

Snow cover, River basins, Snow depth, Snow surveys, Statistical analysis, Caucasus Mountains

50-3

Using interactive methods of processing images from satellites to determine the snow cover depth in mountain catchment areas. [Primenenie interaktivnykh metodov obrabotki izobrazheniĭ so sputnikov dlia opredeleniia zasnezhennosti gornykh vodosborov]

Pichugina, E.L., *Sredneaziatskiĭ regional'nyĭ nauchno-issledovatel'skiĭ gidrometeorologicheskiĭ institut. Trudy*, 1991, 140(221), p.18-27, In Russian. 6 refs.

Spaceborne photography, Photointerpretation, Snow cover distribution, Snow depth, Analysis (mathematics), River basins, Snow surveys

50-4

Evaluating snow cover depth in a mountain basin from satellite information under the conditions of partially shaded slopes. [Ob otsenke zasnezhennosti gornogo basseĭna po sputnikovoĭ informatsii v usloviiakh chastichnoĭ zatenennosti sklonov]

Pichugina, E.L., Tsarev, B.K., *Sredneaziatskiĭ regional'nyĭ nauchno-issledovatel'skiĭ gidrometeorologicheskiĭ institut. Trudy*, 1991, 140(221), p.27-40, In Russian. 7 refs.

Snow cover distribution, Snow depth, Spacecraft, Slope orientation, River basins, Mathematical models, Photointerpretation

50-5

High-altitude distribution of the seasonal snow line in a mountain river basin. [Vysotnoe raspredelenie sezonnoĭ snegovoĭ granitsy v gornom rechnom basseĭne]

Tursunov, U.O., *Sredneaziatskiĭ regional'nyĭ nauchno-issledovatel'skiĭ gidrometeorologicheskiĭ institut. Trudy*, 1991, 140(221), p.41-50, In Russian. 4 refs.

Snow cover distribution, Snow line, River basins, Slope orientation, Kazakhstan—Pskem River, Uzbekistan—Sokh River, Kyrgyzstan—Sandalash River

50-6

Calculating snow depth in avalanche catchments. [K raschetu tolshchiny snega v lavinosborakh]

Kanaev, L.A., Ganieva, R.G., *Sredneaziatskiĭ regional'nyĭ nauchno-issledovatel'skiĭ gidrometeorologicheskiĭ institut. Trudy*, 1991, 140(221), p.50-58, In Russian. 1 ref.

Snow depth, Snow accumulation, Avalanches, CIS—Dukant River

50-7

Calculating the heat transfer coefficient of dry snow. [Otsenka koeffitsienta temperaturoprovodnosti sukhogo snega]

Brukhanda, V.I., Isaev, A.A., *Sredneaziatskiĭ regional'nyĭ nauchno-issledovatel'skiĭ gidrometeorologicheskiĭ institut. Trudy*, 1991, 140(221), p.58-63, In Russian. 3 refs.

Heat transfer coefficient, Snow thermal properties, Analysis (mathematics), Snow surface

50-8

Possibility of calculating the recurrence of avalanche hazard situations based on the duration of a persistent stable snow cover. [O vozmozhnosti otsenki povtoriaemosti lavinoopasnykh situatsiĭ po prodolzhitel'nosti zaleganiia ustoĭchivogo snezhnogo pokrova]

Kolesnikov, E.I., Podstrechnyĭ, A.N., *Sredneaziatskiĭ regional'nyĭ nauchno-issledovatel'skiĭ gidrometeorologicheskiĭ institut. Trudy*, 1991, 140(221), p.63-71, In Russian. 9 refs.

Avalanche formation, Snow cover stability, Avalanche forecasting, Snow cover effect

50-9

Possibility of long range forecasting of avalanche regimes and some ecological changes on the northern slope of Zailyskiy Alatau in relation to the anticipated anthropogenic climatic changes. [Vozmozhnosti dolgosrochnogo prognoza snezhnolavinnogo rezhima i nekotorykh ekologicheskikh sdvigov na severnom sklone Zailiĭskogo Alatau v sviazi s ozhidaemym antropogennym izmeneniem klimata]

Kondrashov, I.V., Podstrechnyĭ, A.N., *Sredneaziatskiĭ regional'nyĭ nauchno-issledovatel'skiĭ gidrometeorologicheskiĭ institut. Trudy*, 1991, 140(221), p.72-80, In Russian. 11 refs.

Long range forecasting, Avalanche forecasting, Avalanche formation, Avalanche mechanics, Slope orientation, Environmental impact, Climatic changes, Snow depth, Snow cover stability, Kazakhstan—Zailiyskiy Alatau, Kazakhstan—Malaya Almatinka River

50-10

Forecasting snowstorm avalanches along the Ust'-Kamenogorsk-Zyrianovsk highway. [Prognoz metelevykh lavin po avtodoroge Ust'-Kamenogorsk-Zyrianovsk]

Kolesnikov, E.I., Kuz'menko, V.A., *Sredneaziatskiĭ regional'nyĭ nauchno-issledovatel'skiĭ gidrometeorologicheskiĭ institut. Trudy*, 1991, 140(221), p.80-86, In Russian. 3 refs.

Avalanche forecasting, Snowstorms, Kazakhstan—Ust'-Kamenogorsk, Kazakhstan—Zyrianovsk

50-11

Reestablishing periodic values of meteorological factors in the mountains (in the example of the avalanche station Naminga). [O vosstanovlenii srochnykh znacheniĭ meteoelementov v gorakh (na primere snegolavinnoĭ stantsii Naminga)]

Kharitonov, G.G., *Sredneaziatskiĭ regional'nyĭ nauchno-issledovatel'skiĭ gidrometeorologicheskiĭ institut. Trudy*, 1991, 140(221), p.86-95, In Russian. 4 refs.

Air temperature, Temperature gradients, Wind velocity, Avalanches

50-12

Forecasting avalanches from freshly fallen, snowstorm and wet snow in the Anzobskiy Pass region. [Prognoz lavin iz svezhevypavshego, metelevogo i mokrogo snega raĭone Anzobskogo perevala]

Kharitonov, G.G., Sannikov, A.G., Burnaev, V.S., *Sredneaziatskii regional'nyĭ nauchno-issledovatel'skiĭ gidrometeorologicheskiĭ institut. Trudy*, 1991, 140(221), p.96-104, In Russian. 2 refs.

Avalanche forecasting, Snowstorms, Wet snow, Falling snow, Avalanche formation, Tajikistan—Anzobskiy Pass

50-13

Forecasting avalanche flow during a snowfall using a weighted value method. [Prognoz skhoda snezhnykh lavin vo vremia snegopadov s ispol'zovaniem metoda vzveshennykh ballov]

Sezin, V.M., Guliaev, G.P., *Sredneaziatskiĭ regional'nyĭ nauchno-issledovatel'skiĭ gidrometeorologicheskiĭ institut. Trudy*, 1991, 140(221), p.104-111, In Russian. 4 refs.

Avalanche forecasting, Avalanche mechanics, Snowfall, Analysis (mathematics), Statistical analysis

50-14

Glaciation of the Upper Koksa River in the mid-19th century. [Oledenenie verkhov'ev r. Koksu v seredine XIX veka]

Glazyrin, G.E., Gaĭduchenia, V.A., *Sredneaziatskiĭ regional'nyĭ nauchno-issledovatel'skiĭ gidrometeorologicheskiĭ institut. Trudy*, 1991, 140(221), p.111-114, In Russian. 8 refs.

Rivers, Glaciation, River basins, Glaciers, Russia—Koksa River

50-15

Calculating the hydrography of glacier runoff considering the travel time. [Raschet gidrografa stoka s lednikov s uchetom vremeni dobeganiia]

Pertsiger, F.I., *Sredneaziatskiĭ regional'nyĭ nauchno-issledovatel'skiĭ gidrometeorologicheskiĭ institut. Trudy*, 1991, 140(221), p.115-126, In Russian. 15 refs.

Runoff, Glacier melting, Glacial hydrology, Mathematical models, Glacier surfaces

50-16

Glacier runoff in the Sarydzhaz River basin. [Lednikovyĭ stok v Basseĭne r. Sarydzhaz]

Konovalov, V.G., Prokhorenko, S.I., *Sredneaziatskiĭ regional'nyĭ nauchno-issledovatel'skiĭ gidrometeorologicheskiĭ institut. Trudy*, 1991, 140(221), p.126-137, In Russian.. 6 refs.

Runoff, Glacier melting, Meltwater, River basins, Glaciation, Analysis (mathematics), Glacial rivers, Kyrgyzstan—Sarydzhaz River

50-17

Using the receiver-indicator "Racal-Decca MK53G" of satellite navigation system "Navstar" to determine ship maneuvering elements. [Ispol'zovanie priemoindikatora "Racal-Decca MK53G" SNS "Navstar" dlia opredeleniia manevrennykh elementov sudna]

Dudnik, S.A., *Morskoĭ transport; ekspress-informatsiia. Seriia: Sudovozhdenie, sviaz' i bezopasnost' moreplavaniia.* 1993, 3(286), 31p. (pertinent p.6-18), In Russian.

Navigation, Equipment, Cold weather operation

50-18

Technical fleet operations. [Tekhnicheskaia ekspluatatsiia flota]

Zhukov, A.V., ed, *Morskoĭ transport; informatsionnyĭ sbornik. Seriia: Nauchno-tekhnicheskie dostizheniia i peredovoi opyt, rekomenduemye dlia vnedreniia na morskom transporte*, 1992, 6(24), 44p. (pertinent p.13-15), In Russian.

Electric equipment, Ships, Cold weather operation, Welding

50-19

AARI is your partner.

Mustafin, N.V., St. Petersburg, Arctic and Antarctic Research Institute, 1993, 56p., Translated from Russian.

Organizations, Research projects, International cooperation, Sea ice, Oceanography, Hydrology, Meteorology, Climate, Geography, Ecosystems, Ships, Expeditions

50-20

Ecological conditions in the Barents Sea (institutes and literature catalogue).

Doronin, N., St. Petersburg, Jan. 1992, 30p., Prepared for Norsk Polarinstitutt. 238 refs.

Ecology, Organizations, Research projects, Bibliographies, Marine biology, Plankton, Ecosystems, Barents Sea

50-21

Soils in frozen regions of the biosphere, their function and use. [Pochvy merzlotnykh regionov biosfery, ikh funktsionirovanie i ispol'zovanie]

Makeev, O.V., Pushchino, Nauchnyĭ tsentr biologicheskikh issledovaniĭ AN SSSR, 1990, 44p., In Russian. Refs. p.41-43.

Geocryology, Permafrost distribution, Tundra soils, Frozen ground, Forecasting, Cryogenic soils

50-22
Soil formation in floodplains in high latitudes. [Pochvoobrazovanie v dolgopoemnykh landshaftakh vysokikh shirot]
Gafurov, F.G., Firsova, V.P., Ekaterinburg, UrO RAN, 1992, 146p., In Russian. 176 refs.
Soil formation, Soil classification, Agriculture, Soil chemistry, Soil composition, Floodplains, Alluvium, Clay soils, Cryogenic soils, Russia—Ob' River

50-23
Ground freezing 91, Vol.2.
International Symposium on Ground Freezing, 6th, Beijing, Sep. 10-12, 1991, Yu, X., ed, Wang, C.S., ed, Rotterdam, A.A. Balkema, 1992, p.397-565, Refs. passim. For selected papers see 50-24 through 50-42. For Vol.1 see 46-2732 through 46-2788.
Soil freezing, Artificial freezing, Soil stabilization, Frozen ground strength, Frost heave, Shaft sinking

50-24
General report on heat and mass transfer.
Fukuda, M., Ishizaki, T., International Symposium on Ground Freezing, 6th, Beijing, Sep. 10-12, 1991. Ground freezing 91. Vol.2. Edited by X. Yu and C.S. Wang, Rotterdam, A.A. Balkema, 1992, p.409-415, 31 refs.
Soil freezing, Frost heave, Frozen ground thermodynamics, Frozen ground chemistry, Heat transfer, Mass transfer

50-25
Evaluation of reducing method of total heave amounts using soil-cement mixtures.
Fukuda, M., Yamamoto, H., Izuta, H., International Symposium on Ground Freezing, 6th, Beijing, Sep. 10-12, 1991. Ground freezing 91. Vol.2. Edited by X. Yu and C.S. Wang, Rotterdam, A.A. Balkema, 1992, p.417-424, 10 refs.
Soil freezing, Frost heave, Subgrade soils, Soil cement, Frost resistance, Frost protection, Road maintenance

50-26
General report on mechanical properties.
Chen, X.S., Su, L.F., International Symposium on Ground Freezing, 6th, Beijing, Sep. 10-12, 1991. Ground freezing 91. Vol.2. Edited by X. Yu and C.S. Wang, Rotterdam, A.A. Balkema, 1992, p.429-435, 31 refs.
Soil freezing, Artificial freezing, Frozen ground strength, Soil creep, Soil tests

50-27
New method for predicting the long-term strength of frozen soils.
Roman, L.T., Zhu, Y.L., International Symposium on Ground Freezing, 6th, Beijing, Sep. 10-12, 1991. Ground freezing 91. Vol.2. Edited by X. Yu and C.S. Wang, Rotterdam, A.A. Balkema, 1992, p.437-442, 3 refs.
Soil freezing, Frozen ground strength, Frozen ground compression, Frozen ground temperature, Soil creep, Soil tests, Mathematical models

50-28
General report on engineering design.
Thimus, J.F., International Symposium on Ground Freezing, 6th, Beijing, Sep. 10-12, 1991. Ground freezing 91. Vol.2. Edited by X. Yu and C.S. Wang, Rotterdam, A.A. Balkema, 1992, p.449-453, 14 refs.
Soil freezing, Artificial freezing, Frost heave, Frozen ground strength, Soil stabilization, Shaft sinking, Engineering geology

50-29
Control and prediction of the temperature development in a clay formation during the construction of a deep frozen shaft in Germany.
Jordan, P., Jagow-Klaff, R., International Symposium on Ground Freezing, 6th, Beijing, Sep. 10-12, 1991. Ground freezing 91. Vol.2. Edited by X. Yu and C.S. Wang, Rotterdam, A.A. Balkema, 1992, p.455-461, 1 ref.
Soil freezing, Artificial freezing, Frozen ground strength, Frozen ground temperature, Soil stabilization, Shaft sinking, Clay soils, Radioactive wastes, Waste disposal, Germany

50-30
Influence of soil properties on ice-wall formation.
Zhang, Y., International Symposium on Ground Freezing, 6th, Beijing, Sep. 10-12, 1991. Ground freezing 91. Vol.2. Edited by X. Yu and C.S. Wang, Rotterdam, A.A. Balkema, 1992, p.463-467, 2 refs.
Soil freezing, Artificial freezing, Frozen ground strength, Frozen ground thermodynamics, Soil stabilization, Shaft sinking, Germany

50-31
General report on case histories.
Harris, J.S., International Symposium on Ground Freezing, 6th, Beijing, Sep. 10-12, 1991. Ground freezing 91. Vol.2. Edited by X. Yu and C.S. Wang, Rotterdam, A.A. Balkema, 1992, p.473-479, 6 refs.
Soil freezing, Artificial freezing, Soil stabilization, Shaft sinking

50-32
Construction of a shallow tunnel under protection of a frozen soil structure: Fahrlachtunnel at Mannheim, Germany.
Borkenstein, D., Jordan, P., Schäfers, P., International Symposium on Ground Freezing, 6th, Beijing, Sep. 10-12, 1991. Ground freezing 91. Vol.2. Edited by X. Yu and C.S. Wang, Rotterdam, A.A. Balkema, 1992, p.481-487, 5 refs.
Soil freezing, Artificial freezing, Soil stabilization, Frozen ground strength, Tunnels, Tunneling (excavation), Germany

50-33
Testing methods for frozen soils.
ISGF (International Symposium on Ground Freezing) Working Group 1, International Symposium on Ground Freezing, 6th, Beijing, Sep. 10-12, 1991. Ground freezing 91. Vol.2. Edited by X. Yu and C.S. Wang, Rotterdam, A.A. Balkema, 1992, p.493-502, Refs. passim.
Soil freezing, Artificial freezing, Frozen ground strength, Soil tests

50-34
Frozen ground structures—basic principles of design.
ISGF (International Symposium on Ground Freezing) Working Group 2, International Symposium on Ground Freezing, 6th, Beijing, Sep. 10-12, 1991. Ground freezing 91. Vol.2. Edited by X. Yu and C.S. Wang, Rotterdam, A.A. Balkema, 1992, p.503-513, 8 refs.
Soil freezing, Artificial freezing, Soil stabilization, Frozen ground strength, Frozen ground thermodynamics, Engineering geology

50-35
Recent ground freezing in Scandinavia.
Berggren, A.L., International Symposium on Ground Freezing, 6th, Beijing, Sep. 10-12, 1991. Ground freezing 91. Vol.2. Edited by X. Yu and C.S. Wang, Rotterdam, A.A. Balkema, 1992, p.517-519.
Soil freezing, Artificial freezing, Soil stabilization, Frozen ground strength, Engineering geology

50-36
Frost heaving of a saturated soil under various temperature conditions and overburden pressures.
Ishizaki, T., Fukuda, M., International Symposium on Ground Freezing, 6th, Beijing, Sep. 10-12, 1991. Ground freezing 91. Vol.2. Edited by X. Yu and C.S. Wang, Rotterdam, A.A. Balkema, 1992, p.521-522, 2 refs.
Soil freezing, Frost heave, Soil pressure, Soil water migration

50-37
Thermal analysis of frozen soil wall during partially stopping of cooling.
Ito, H., Naganuma, K., Nogi, A., International Symposium on Ground Freezing, 6th, Beijing, Sep. 10-12, 1991. Ground freezing 91. Vol.2. Edited by X. Yu and C.S. Wang, Rotterdam, A.A. Balkema, 1992, p.523-525, 2 refs.
Soil freezing, Artificial freezing, Soil stabilization, Frozen ground strength, Tunneling (excavation), Railroad tunnels, Japan—Tokyo

50-38
Apparatuses and methods for determining of mechanical properties of freezing and thawing soils.
Orzhekhovskiĭ, IU.R., Ganeles, L.B., Nikulin, B.V., International Symposium on Ground Freezing, 6th, Beijing, Sep. 10-12, 1991. Ground freezing 91. Vol.2. Edited by X. Yu and C.S. Wang, Rotterdam, A.A. Balkema, 1992, p.529-531, 2 refs.
Soil freezing, Frost heave, Frozen ground strength, Frost resistance, Pile load tests

50-39
Sinking of main shaft in Chengsilou Mine without freeze tube breakage.
Pang, R.Q., International Symposium on Ground Freezing, 6th, Beijing, Sep. 10-12, 1991. Ground freezing 91. Vol.2. Edited by X. Yu and C.S. Wang, Rotterdam, A.A. Balkema, 1992, p.533-535.
Soil freezing, Artificial freezing, Soil stabilization, Shaft sinking, China—Henan Province

50-40
Cold storage of agricultural products surrounded by artificial permafrost using heat pipes.
Tsuchiya, F., Ryokai, K., Mochizuki, M., International Symposium on Ground Freezing, 6th, Beijing, Sep. 10-12, 1991. Ground freezing 91. Vol.2. Edited by X. Yu and C.S. Wang, Rotterdam, A.A. Balkema, 1992, p.537-542, 7 refs.
Soil freezing, Artificial freezing, Cold storage, Heat pipes, Permafrost preservation, Japan—Hokkaido

50-41
Application of ground freezing method to two underground projects in water-bearing sand layer.
Zhang, N.Z., International Symposium on Ground Freezing, 6th, Beijing, Sep. 10-12, 1991. Ground freezing 91. Vol.2. Edited by X. Yu and C.S. Wang, Rotterdam, A.A. Balkema, 1992, p.543-545.
Soil freezing, Artificial freezing, Soil stabilization, Shaft sinking

50-42
Freeze sinking construction of Xie Qiao coal mine.
Zhang, Y.X., International Symposium on Ground Freezing, 6th, Beijing, Sep. 10-12, 1991. Ground freezing 91. Vol.2. Edited by X. Yu and C.S. Wang, Rotterdam, A.A. Balkema, 1992, p.547-551.
Soil freezing, Artificial freezing, Soil stabilization, Shaft sinking, China—Anhui Province

50-43
Biennial report, 1993-1994.
Colorado. University. Institute of Arctic and Alpine Research (INSTAAR), Boulder, University of Colorado, [1995], 52p., Refs. passim.
Research projects, Organizations, Education, Cost analysis

50-44
Analytical study of frost nucleation and growth during the crystal growth period.
Şahin, A.Z., *Heat and mass transfer*, 1995, Vol.30, p.321-330, With German summary. 14 refs.
Hoarfrost, Ice crystal growth, Ice crystal adhesion, Ice formation, Ice accretion, Ice solid interface, Ice vapor interface, Nucleation, Mathematical models

50-45
Aqueous nonelectrolyte solutions. Part XIII. Ice and hydrate freezing points of aqueous ethylene oxide solutions and the formula of congruent ethylene oxide hydrate.
Glew, D.N., Rath, N.S., *Canadian journal of chemistry*, 1995, Vol.73, p.788-796, With French summary. 22 refs.
Clathrates, Hydrates, Solutions, Phase transformations, Frozen liquids, Freezing points, Ice temperature

50-46

Observations on a plug of old sea ice in the entrance to Nansen Sound, Ellesmere Island.
Sadler, H.E., Serson, H.V., *Canada. Defence Research Establishment Pacific. Technical memorandum,* Mar. 1981, No.81-5, 18p. + appends., 6 refs.
Sea ice, Ice floes, Ice islands, Fast ice, Ice conditions, Ice growth, Ice cover thickness, Canada—Northwest Territories—Nansen Sound

50-47

Soil deformation and stress analysis under a rolling wheel.
Foster, W.A., Jr., Johnson, C.E., Raper, R.L., Shoop, S.A., MP 3668, North American Conference/Workshop of ISTVS (International Society for Terrain-Vehicle Systems), 5th, Saskatoon, Saskatchewan, May 10-12, 1995. Proceedings. Advanced technology in vehicle-terrain interaction, Hanover, NH, International Society for Terrain-Vehicle Systems (ISTVS), 1995, p.194-203, 5 refs.
All terrain vehicles, Vehicle wheels, Soil strength, Soil trafficability, Soil compaction, Soil tests, Strain tests, Mathematical models, Computerized simulation
The work presented in this paper describes the development of a nonlinear finite element model for predicting deformations and stress distributions in soils caused by a wheel rolling over the surface of the soil. The finite element model includes both geometric and material nonlinear behavior. The wheel's motion is simulated using enforced displacements on the soil surface. The results obtained from the analysis are compared to an existing experimental database. The agreement between analysis and experimental data is shown to be very good in most respects.

50-48

Methodology for predicting for winter conditions in the NATO Reference Mobility Model.
Ahlvin, R.B., Shoop, S.A., MP 3669, North American Conference/Workshop of ISTVS (International Society for Terrain-Vehicle Systems), 5th, Saskatoon, Saskatchewan, May 10-12, 1995. Proceedings. Advanced technology in vehicle-terrain interaction, Hanover, NH, International Society for Terrain-Vehicle Systems (ISTVS), 1995, p.320-334, 12 refs.
All terrain vehicles, Snow vehicles, Vehicle wheels, Tracked vehicles, Rubber snow friction, Snow strength, Soil strength, Traction, Trafficability, Computer programs
The NATO Reference Mobility Model, now in its second release (NRMM II), is a comprehensive computer model that predicts vehicle speed performance for operation on roads, trails and cross-country in all types of weather conditions, including snow cover. Presently, the winter condition in NRMM II is limited specifically to shallow snow on hard frozen ground (referred to herein as the "original" model). This paper discusses methods of incorporating recent work performed by the U.S. Army Cold Regions Research and Engineering Laboratory (CRREL) in NRMM II. These developments extend the simulation capabilities to include snow cover on unfrozen, partially frozen, and ice covered surfaces; a deep snow condition; thawing soils; and ice surfaces with no snow cover.

50-49

Observations of snow deformation by a wheel.
Richmond, P.W., MP 3670, North American Conference/Workshop of ISTVS (International Society for Terrain-Vehicle Systems), 5th, Saskatoon, Saskatchewan, May 10-12, 1995. Proceedings. Advanced technology in vehicle-terrain interaction, Hanover, NH, International Society for Terrain-Vehicle Systems (ISTVS), 1995, p.343-351, 4 refs.
Snow vehicles, Vehicle wheels, Rubber snow friction, Snow strength, Snow deformation, Traction, Trafficability
The deformation of snow by a freely rolling wheel is a complex three-dimensional problem, which is further complicated by the variability of the snow itself. Models created for estimating mobility parameters in snow (e.g., motion resistance) must reflect the associated physical phenomena in their underlying equations and in the prediction results. An understanding of the physical deformation of snow by a wheel will provide information for the improvement and verification of current and future over-snow mobility models. A visualization technique using carpenter's chalk dust, inserted into 12.5-mm diameter holes punched into a snow cover, allowed the observation of the snow deformation caused by a wheel. By carefully removing the snow around the deformed holes, a complete visualization of the three-dimensional deformation was possible. Photographs of the deformation pattern and snow density measurements allowed a detailed analysis of the direction and extent of the deformation. Although the technique is primarily qualitative, some interesting phenomena were observed. Snow deformation occurs primarily at or below the level of the wheel rut in shallow snow and higher in the snowpack if the snow is deep. Increasing wheel width does not seem to increase deformation in the direction perpendicular to vehicle motion, at least in the one comparison available from these tests.

50-50

Modelling vehicle mobility over multi-layered deep snowcover.
Irwin, G.J., Antia, H.E., Mohamed, A.M.O., Yong, R.N., North American Conference/Workshop of ISTVS (International Society for Terrain-Vehicle Systems), 5th, Saskatoon, Saskatchewan, May 10-12, 1995. Proceedings. Advanced technology in vehicle-terrain interaction, Hanover, NH, International Society for Terrain-Vehicle Systems (ISTVS), 1995, p.352-358, 4 refs.
Snow vehicles, All terrain vehicles, Tracked vehicles, Vehicle wheels, Rubber snow friction, Snow strength, Snow cover effect, Traction, Trafficability, Computerized simulation

50-51

Laboratory tests of oil fate in cold water, ice and waves.
Timco, G.W., Davies, M.H., *National Research Council Canada. Hydraulics Laboratory. Technical report,* Aug. 1995, HYD-TR-002, 54p., With French summary. 22 refs.
Oil spills, Water pollution, Ice cover effect, Ice water interface, Ocean waves, Environmental tests

50-52

Report of the International Ice Patrol in the North Atlantic, 1994 season.
U.S. Coast Guard, *U.S. Coast Guard. Bulletin,* 1994, No.80, 67p., CG-188-49, Refs. passim.
Ice reporting, Ice surveys, Sea ice distribution, Ice conditions, Ice edge, Icebergs, Drift

50-53

Water, ice, and meteorological measurements at South Cascade Glacier, Washington, 1994 balance year.
Krimmel, R.M., *U.S. Geological Survey. Water-resources investigations report,* 1995, No.95-4162, 41p., 9 refs.
Glacier surveys, Glacier mass balance, Glacial hydrology, Glacial meteorology, Glacier oscillation, Meltwater, Runoff, United States—Washington

50-54

Ground penetrating radar.
Pilon, J.A., ed, *Canada. Geological Survey. Paper,* 1992, No.90-4, 241p., Refs. passim. Presented at the Ground Penetrating Radar (GPR) Workshop, Ottawa, May 24-26, 1988. For selected papers see 50-55 through 50-67.
DLC QE185.A42 No.90-4
Glacier surveys, Glacier thickness, Ice surveys, Ice cover thickness, Permafrost surveys, Ground ice, Crevasse detection, Radar echoes, Electromagnetic prospecting, Subsurface investigations

50-55

Helicopter-borne alpine glacier surveys using short pulse radar.
Arcone, S.A., Delaney, A.J., Wills, R.H., MP 3671, *Canada. Geological Survey. Paper,* 1992, No.90-4, Ground penetrating radar. Edited by J.A. Pilon, p.25-32, With French summary. 9 refs.
Mountain glaciers, Glacier surveys, Glacier thickness, Subglacial observations, Glacier beds, Bottom topography, Radar echoes, Electromagnetic prospecting, Airborne radar, United States—Alaska—Alaska Range
Helicopter-borne ground penetrating radar (GPR) surveys were performed in Mar. 1986 on two small tributaries to the Yanert Glacier in the Alaska Range. The purpose was to find out if the UHF range could be used to investigate small, cold glaciers where fractures and crevasses might be minimal. The GPR used a GSSI model 3102 antenna unit rated at 8 W peak radiated power at a pulse center frequency of approximately 500 MHz, which is considerably higher than that of conventional radio echo sounders. The glaciers were profiled for about 1 km along straight lines, starting at their termini where bedrock was exposed, and ending where the bottom returns were barely visible at more than 28 m depth. In one case, the analog graphic record revealed a linear bottom profile and predominantly homogeneous conditions within the ice sheet. Use of a geometric attenuation dependency correction of distance squared on the digitized records resulted in a calculated attenuation rate for absorption of near 0 dB/m for the peak value of the bottom returns, but about ±3 dB/m for the total energy of the wavelet.

50-56

Ground penetrating radar investigations of massive ground ice.
Dallimore, S.R., Davis, J.L., *Canada. Geological Survey. Paper,* 1992, No.90-4, Ground penetrating radar. Edited by J.A. Pilon, p.41-48, With French summary. 11 refs.
Permafrost surveys, Subsurface investigations, Ground ice, Fossil ice, Ice detection, Radar echoes, Electromagnetic prospecting, Canada—Northwest Territories—Richards Island, Canada—Northwest Territories—Tuktoyaktuk Peninsula

50-57

Applications of ground penetrating radar to mining, groundwater, and geotechnical projects: selected case histories.
Davis, J.L., Annan, A.P., *Canada. Geological Survey. Paper,* 1992, No.90-4, Ground penetrating radar. Edited by J.A. Pilon, p.49-55, With French summary. 5 refs.
Frozen lakes, Ice cover effect, Subsurface investigations, Bottom topography, Bedrock, Ice cover effect, Radar echoes, Electromagnetic prospecting

50-58

Radar investigations of firn structures and crevasses.
Glover, J.M., Rees, H.V., *Canada. Geological Survey. Paper,* 1992, No.90-4, Ground penetrating radar. Edited by J.A. Pilon, p.75-84, With French summary. 8 refs.
Ice sheets, Glacier surveys, Glacier thickness, Subglacial observations, Firn stratification, Crevasse detection, Subsurface investigations, Radar echoes, Electromagnetic prospecting, Greenland

50-59

Microprocessor based ice-radar system for surface profiling.
Jacobel, R.W., Anderson, S.K., Rioux, D.F., *Canada. Geological Survey. Paper,* 1992, No.90-4, Ground penetrating radar. Edited by J.A. Pilon, p.101-105, With French summary. 5 refs.
Glacier surveys, Glacier thickness, Subglacial observations, Subsurface investigations, Synthetic aperture radar, Portable equipment, Radar echoes, Electromagnetic prospecting
The authors have built a radio-echo sounder which uses a low-frequency, broadband impulse transmitter and a microprocessor-based digital recording system. The unit is mounted on skis, and power is delivered by a small generator and batteries. The receiver uses a portable digital storage oscilloscope, which passes data via a microprocessor unit to a cassette tape for offline analysis on a personal computer. Though originally intended primarily for studies on temperate ice, the sounder was tested in Antarctica during the 1987-88 field season. The system performed well there and in field tests and subsequent studies on South Cascade Glacier, WA, and a number of interesting results were obtained. An oblique incidence profile where transmitter-receiver separation varied was used to study the dielectric permittivity of the ice and to locate internal layers at shallow depths. The sounder was also deployed in conjunction with hot water drilling experiments attempting to create cavities at known locations within the ice. Waveforms from different transmitter-receiver orientations around the borehole were combined in the offline analysis to produce a more directional synthetic aperture, emphasizing returns from the borehole region. (Auth. mod.)

50-60

Impulse radar studies of interface roughness.
Jezek, K.C., Arcone, S.A., Daly, S.F., Wills, R.H., MP 3672, *Canada. Geological Survey. Paper,* 1992, No.90-4, Ground penetrating radar. Edited by J.A. Pilon, p.107-115, With French summary. 8 refs.
Ice surveys, River ice, Ice jams, Ice surface, Ice cover thickness, Ice water interface, Airborne radar, Radar echoes
Recent progress by several investigators has led to improved methods for estimating interface roughness via wave scattering measurements. These techniques, already tested on sonar data, are based on a union of scalar scattering theory derived from the Helmholtz-Kirchoff integral with statistical representations of measured echo amplitude variations as have been employed to describe phenomena such as laser speckle. The usefulness of these methods has been in their ability to identify successfully parameters common to both the probabilistic and scattering formulations, which are also related to interface characteristics—such as the r.m.s. roughness, correlation function, and Fresnel reflection coefficient. This paper discusses the application of this approach with its possible advantages and limitations to impulse radar data. The authors model echo amplitude variations via the parameter gamma, defined by previous investigators as the ratio of the coherently to incoherently scattered energy. In this case, gamma is inversely proportional to the square of the wave num-

ber, the square of the r.m.s. roughness and integral of the surface correlation function. Gamma is evaluated for a set of typical system and surface parameters and then used to calculate probability density functions of echo amplitude.

50-61

Estimating sea ice thickness from impulse radar sounding time of flight data.

Kovacs, A., Morey, R.M., MP 3673, *Canada. Geological Survey. Paper,* 1992, No.90-4, Ground penetrating radar. Edited by J.A. Pilon, p.117-124, With French summary. 1 ref.

Ice surveys, Sea ice, Ice floes, Snow ice interface, Snow cover effect, Ice cover thickness, Ice water interface, Ice dielectrics, Radar echoes

Two floes of second year sea ice were probed using impulse radar sounding and direct drilling methods. The resulting two-way time of flight of the impulse radar electromagnetic wavelet, travelling from the surface to the ice "bottom" and back to the surface, was compared with snow and ice thickness data obtained from a drillhole. From this comparison, simple relationships are presented to estimate the thickness of sea ice, between about 1 to 8 m thick, with or without a snow cover. Relations are also presented that show the bulk or apparent dielectric constant of the ice floes versus ice thickness, again with or without the snow cover. The data revealed that the apparent dielectric constant of the sea ice decreased with increasing ice thickness from a value of about 7 for ice 1 m thick to about 3.5 for ice 6 m thick.

50-62

Expert system for automated interpretation of ground penetrating radar data.

Lee, S., Milios, E., Greiner, R., Rossiter, J.R., *Canada. Geological Survey. Paper,* 1992, No.90-4, Ground penetrating radar. Edited by J.A. Pilon, p.125-131, With French summary. 12 refs.

Ice surveys, Sea ice distribution, Ice cover thickness, Radar echoes, Image processing, Computerized simulation

50-63

Application of ground penetrating radar to a study of peat stratigraphy: preliminary results.

Nobes, D.C., Warner, B.G., *Canada. Geological Survey. Paper,* 1992, No.90-4, Ground penetrating radar. Edited by J.A. Pilon, p.133-138, With French summary. 9 refs.

Peat, Soil surveys, Soil mapping, Soil profiles, Wetlands, Subsurface investigations, Electromagnetic prospecting, Canada—Ontario

50-64

Radar design for geophysical sounding.

Oswald, G.K.A., *Canada. Geological Survey. Paper,* 1992, No.90-4, Ground penetrating radar. Edited by J.A. Pilon, p.151-164, With French summary. 13 refs.

Ice surveys, Sea ice, Ice cover thickness, Airborne radar, Electromagnetic prospecting

50-65

Ground probing radar in the investigation of permafrost and subsurface characteristics of surficial deposits in Kangiqsualujjuaq, northern Quebec.

Pilon, J.A., Allard, M., Séguin, M.K., *Canada. Geological Survey. Paper,* 1992, No.90-4, Ground penetrating radar. Edited by J.A. Pilon, p.165-175, With French summary. 16 refs.

Permafrost surveys, Permafrost structure, Permafrost thickness, Permafrost bases, Glacial till, Ground ice, Ice detection, Radar echoes, Subsurface investigations, Electromagnetic prospecting, Canada—Quebec—Kangiqsualujjuaq

50-66

Digital enhancement of ground probing radar data.

Rees, H.V., Glover, J.M., *Canada. Geological Survey. Paper,* 1992, No.90-4, Ground penetrating radar. Edited by J.A. Pilon, p.187-192, With French summary. 4 refs.

Ice sheets, Glacier surveys, Glacier thickness, Crevasse detection, Electromagnetic prospecting, Image processing, Greenland

50-67

Interpretation of short-pulse radar soundings from low latitude, high altitude glaciers of Peru and China.

Thompson, L.G., *Canada. Geological Survey. Paper,* 1992, No.90-4, Ground penetrating radar. Edited by J.A. Pilon, p.213-225, With French summary. 14 refs.

Mountain glaciers, Glacier surveys, Glacier thickness, Glacier beds, Electromagnetic prospecting, Peru, China

50-68

Proceedings.

Management of the Boreal Forest, Anchorage, AK, Dec. 3-4, 1987, Anchorage, AK, Resource Development Council Education Foundation, Inc., [1988], 102p., Refs. passim.

DLC SD144.A4M26 1988

Forestry, Natural resources, Economic development, Regional planning, Cost analysis

50-69

Radiation conditions on the Greenland ice sheet.

Konzelmann, T., *Zürcher Geographische Schriften,* 1994, No.56, 124p., With German summary. Refs. p.117-120.

DLC QC926.45.G83K66 1994

Ice sheets, Radiation balance, Glacier surveys, Glacial meteorology, Glacier heat balance, Snow ice interface, Snow air interface, Snow cover effect, Snow heat flux, Albedo, Cloud cover, Greenland

50-70

Development of a two-dimensional finite element model to calculate temperatures and stresses in frost susceptible soil around a chilled pipeline.

Coutts, R.J., Waterloo, Ontario, University, 1991, 124p., M.S. thesis. 48 refs.

Pipeline freezing, Underground pipelines, Soil freezing, Freezing front, Frost heave, Frost action, Frost resistance, Frozen ground strength, Frozen ground thermodynamics, Mathematical models, Computerized simulation

50-71

Particle translocation and initial soil development on a glacier foreland, Kerguelen Islands, Subantarctic.

Frenot, Y., Van Vliet-Lanoë, B., Gloaguen, J.C., *Arctic and alpine research,* May 1995, 27(2), p.107-115, 44 refs.

Cryogenic soils, Soil formation, Frost weathering, Periglacial processes, Outwash, Glacial till, Vegetation factors, Vegetation patterns, Revegetation, —Kerguelen Islands

The first stages of soil formation in the subantarctic are poorly known. In the Kerguelen Is., initial soil development was studied along a chronosequence (0-200 yr old) on a glacier foreland in a largely ahumic environment. The role of organic matter and attendant weathering is much less than the physical processes related to the high precipitation on the Kerguelen glacier forelands where mechanical weathering, frost-heaving, and particle translocation are dominant. These processes can be considered as an initial, prebiotic pedogenesis development in oligotrophic conditions. Colonization processes occur but the establishment of plant communities is slow, limited by nutrient and water availability. After a delay of two centuries, biotic pedogenesis could supplement mechanical pedogenesis as shown by the development of the new A0/A1 horizon, rejuvenating the old sites. (Auth. mod.)

50-72

Spatial variation in tree seedling and krummholz growth in the forest-tundra ecotone of Rocky Mountain National Park, Colorado, U.S.A.

Weisberg, P.J., Baker, W.L., *Arctic and alpine research,* May 1995, 27(2), p.116-129, 53 refs.

Forest tundra, Alpine tundra, Tundra vegetation, Tundra climate, Plant ecology, Plant physiology, Vegetation patterns, Revegetation, Forest lines, Phenology, Growth, United States—Colorado—Rocky Mountain National Park

50-73

Effects of grazing on alpine vegetation: a comparison of the central Caucasus, Republic of Georgia, with the Colorado Rocky Mountains, U.S.A.

Bock, J.H., Jolls, C.L., Lewis, A.C., *Arctic and alpine research,* May 1995, 27(2), p.130-136, 50 refs.

Alpine tundra, Tundra vegetation, Plant ecology, Vegetation patterns, Forest lines, Grasses, Grazing, United States—Colorado—Rocky Mountains, Georgia

50-74

Water relations of *Carex stans* in wet sedge-moss tundra at a high arctic oasis, Devon Island, N.W.T., Canada.

Nosko, P., Courtin, G.M., *Arctic and alpine research,* May 1995, 27(2), p.137-145, 54 refs.

Wetlands, Tundra vegetation, Tundra soils, Tundra climate, Plant ecology, Plant physiology, Mosses, Canada—Northwest Territories—Devon Island

50-75

Variability in methane emissions from wetlands at northern treeline near Churchill, Manitoba, Canada.

Rouse, W.R., Holland, S., Moore, T.R., *Arctic and alpine research,* May 1995, 27(2), p.146-156, 26 refs.

Wetlands, Forest lines, Forest tundra, Tundra climate, Tundra soils, Nutrient cycle, Soil air interface, Atmospheric composition, Canada—Manitoba—Churchill

50-76

Recent cooling along the southern shore of Hudson Strait, Quebec, Canada, documented from permafrost temperature measurements.

Allard, M., Wang, B.L., Pilon, J.A., *Arctic and alpine research,* May 1995, 27(2), p.157-166, 23 refs.

Permafrost surveys, Permafrost thickness, Permafrost thermal properties, Frozen ground temperature, Soil air interface, Tundra climate, Climatic changes, Canada—Hudson Strait

50-77

Long-term monitoring of permafrost change in a palsa peatland in northern Quebec, Canada: 1983-1993.

Laberge, M.J., Payette, S., *Arctic and alpine research,* May 1995, 27(2), p.167-171, 28 refs.

Permafrost surveys, Permafrost distribution, Permafrost indicators, Frost mounds, Peat, Wetlands, Forest tundra, Tundra climate, Climatic changes, Canada—Quebec

50-78

Distribution of *Phippsia algida* and autosuccession in the polar semidesert, Canadian High Arctic.

Grulke, N.E., *Arctic and alpine research,* May 1995, 27(2), p.172-179, 45 refs.

Tundra vegetation, Plant ecology, Vegetation patterns, Revegetation, Grasses, Biogeography, Canada—Northwest Territories—Arctic Archipelago

50-79

Glacial fluctuations in the Southern Alps of New Zealand determined from snowline elevations.

Chinn, T.J.H., *Arctic and alpine research,* May 1995, 27(2), p.187-198, 39 refs.

Glacier surveys, Glacier oscillation, Glacier mass balance, Glacial meteorology, Snow ice interface, Snow line, Climatic changes, New Zealand

50-80

Preliminary stratigraphy from Lansing map area, Yukon Territory.

Roots, C., Brent, D., *Canada. Geological Survey. Current research. Part A: Cordillera and Pacific Margin,* 1994, No.1994-A, p.1-9, With French summary. 12 refs.

DLC QE1.G49125 1994

Exploration, Geological surveys, Geological maps, Minerals, Natural resources, Geochemistry, Stratigraphy, Geologic structures, Canada—Yukon Territory

50-81

Tectonic framework of the Teslin region, southern Yukon Territory.

Gordey, S.P., Stevens, R.A., *Canada. Geological Survey. Current research. Part A: Cordillera and Pacific Margin,* 1994, No.1994-A, p.11-18, With French summary. 29 refs.

DLC QE1.G49125 1994

Exploration, Geological surveys, Geological maps, Minerals, Natural resources, Geochemistry, Stratigraphy, Geologic structures, Tectonics, Canada—Yukon Territory

50-82

New sulphide occurrences in the northeastern part of Iskut River map area and southeastern part of Telegraph Creek map area, northwestern British Columbia.

Gunning, M.H., Patterson, K., Green, D., *Canada. Geological Survey. Current research. Part A: Cordillera and Pacific Margin,* 1994, No.1994-A, p.25-36, With French summary. 17 refs.

DLC QE1.G49125 1994

Exploration, Geological surveys, Geological maps, Minerals, Natural resources, Geochemistry, Stratigraphy, Geologic structures, Canada—British Columbia

50-83

Stratigraphic and structural setting of mineral deposits in the Brucejack Lake area, northwestern British Columbia.

Davies, A.G.S., Lewis, P.D., Macdonald, A.J., *Canada. Geological Survey. Current research. Part A: Cordillera and Pacific Margin,* 1994, No.1994-A, p.37-43, With French summary. 15 refs.

DLC QE1.G49125 1994

Exploration, Geological surveys, Geological maps, Minerals, Natural resources, Geochemistry, Stratigraphy, Geologic structures, Canada—British Columbia

50-84

Geology of the Cambria Icefield: regional setting for Red Mountain Gold deposit, northwestern British Columbia.

Greig, C.J., Anderson, R.G., Daubeny, P.H., Bull, K.F., Hinderman, T.K., *Canada. Geological Survey. Current research. Part A: Cordillera and Pacific Margin,* 1994, No.1994-A, p.45-56, With French summary. 21 refs.

DLC QE1.G49125 1994

Exploration, Geological surveys, Geological maps, Minerals, Gold, Natural resources, Geochemistry, Stratigraphy, Geologic structures, Canada—British Columbia

50-85

New regional mapping project in Vernon map area, British Columbia.

Thompson, R.I., Daughtry, K.L., *Canada. Geological Survey. Current research. Part A: Cordillera and Pacific Margin,* 1994, No.1994-A, p.117-122, With French summary. 6 refs.

DLC QE1.G49125 1994

Exploration, Geological surveys, Geological maps, Minerals, Natural resources, Geochemistry, Stratigraphy, Geologic structures, Canada—British Columbia

50-86

Quaternary geology and terrain inventory, Foothills and adjacent plains, southwestern Alberta: some new insights into the last two glaciations.

Jackson, L.E., Jr., *Canada. Geological Survey. Current research. Part A: Cordillera and Pacific Margin,* 1994, No.1994-A, p.237-242, With French summary. 14 refs.

DLC QE1.G49125 1994

Glaciation, Glacial geology, Glacial deposits, Quaternary deposits, Glacial till, Geological surveys, Stratigraphy, Geochronology, Paleoclimatology, Canada—Alberta

50-87

State of Alaska's participation in spill response and preparedness in the state.

Vogt, D., Anchorage, AK, Citizens Oversight Council on Oil and Other Hazardous Wastes, [1992], 22p. + appends., Refs. passim.

DLC TD427.P4V64 1992

Petroleum industry, Oil spills, Oil recovery, Environmental impact, Environmental protection, Regional planning, Legislation, Cost analysis, United States—Alaska

50-88

Across the tundra of Yamal to Belyy Ostrov: expedition to the Far North on the Yamal Peninsula in 1928-1929. [Po tundram IAmala k Belomu Ostrovu; ekspeditsiia na Kraĭniĭ Sever poluostrova IAmal v 1928-1929 gg.]

Evladov, V.P., Tiumen', Institut problem osvoeniia Severa SO RAN, 1992, 258p. + illus., In Russian.

Expeditions, History, Russia—Yamal Peninsula, Russia—Belyy Ostrov

50-89

Filtration permeability of permafrost. [Fil'tratsionnaia pronitsaemost' vechnomerzlykh gruntov]

Olovin, B.A., Novosibirsk, Nauka, 1993, 256p., In Russian. Refs. p.246-255.

Permafrost, Permeability, Seepage, Frozen rocks, Porosity, Ground ice, Geocryology, Thermal regime, Russia—Yakutia

50-90

Living Arctic. [Zhivaia Arktika]

Uspenskiĭ, S.M., Moscow, Mysl', 1987, 268p., In Russian.

Expeditions, Ecology, Environmental protection

50-91

Problems in protecting the geological environment; in the example of Eastern Siberia. [Problemy okhrany geologicheskoĭ sredy; na primere Vostochnoĭ Sibiri]

Pinneker, E.V., ed, Novosibirsk, Nauka, 1993, 166p. + 1 fold. map, In Russian. Refs. p.161-164.

Geocryology, Geology, Ground water, Reservoirs, Environmental protection, Environmental impact, Slope stability, Hydrogeology, Russia—Siberia

50-92

Protection of the vegetation cover in the Far North: problems and prospects. [Okhrana rastitel'nogo pokrova Kraĭnego Severa: problemy i perspektivy]

Druzhinina, O.A., Mialo, E.G., Moscow, Agropromizdat, 1990, 176p., In Russian. 185 refs.

Vegetation patterns, Environmental protection, Environmental impact, Tundra vegetation, Protective vegetation, Plants (botany), Revegetation, Russia—Far North

50-93

Proceedings of the First European Offshore Mechanics Symposium, 1990.

European Offshore Mechanics Symposium, First, Trondheim, Norway, Aug. 20-22, 1990, Chung, J.S., ed, Berg, S., ed, Natvig, B.J., ed, Wardenier, J., ed, Golden, CO, International Society of Offshore and Polar Engineers, 1990, 564p., Refs. passim. For selected papers see 50-94 through 50-102.

DLC TC1665.E983 1990

Ice cracks, Ice models, Ice loads, Ice mechanics, Ice solid interface, Offshore structures

50-94

On the modelling of ice cover fracture.

Slepian, L.I., European Offshore Mechanics Symposium, First, Trondheim, Norway, Aug. 20-22, 1990. Proceedings. Edited by J.S. Chung, S. Berg, B.J. Natvig and J. Wardenier, Golden, CO, International Society of Offshore and Polar Engineers, 1990, p.499-504, 5 refs.

Ice cover, Ice cracks, Fracturing, Ice surface, Ice models, Surface energy, Mathematical models, Dynamic loads, Ice mechanics

50-95

Strength of composite ice-resisting walls subjected to combined loads.

Stephens, M.J., Zimmerman, T.J.E., European Offshore Mechanics Symposium, First, Trondheim, Norway, Aug. 20-22, 1990. Proceedings. Edited by J.S. Chung, S. Berg, B.J. Natvig and J. Wardenier, Golden, CO, International Society of Offshore and Polar Engineers, 1990, p.505-511, 7 refs.

Walls, Offshore structures, Shear strength, Composite materials, Steels, Concretes, Ice solid interface, Plasticity tests, Mathematical models, Loads (forces)

50-96

Results of the studies of natural deformations of sea ice fields.

Smirnov, V.N., Shushlebin, A.I., European Offshore Mechanics Symposium, First, Trondheim, Norway, Aug. 20-22, 1990. Proceedings. Edited by J.S. Chung, S. Berg, B.J. Natvig and J. Wardenier, Golden, CO, International Society of Offshore and Polar Engineers, 1990, p.512-516, 12 refs.

Sea ice, Ice deformation, Oscillations, Ice mechanics, Atmospheric disturbances, Ice air interface, Climatic factors

50-97

Variation in ice strength at its interaction with ice and structures.

Krasnov, IU.N., European Offshore Mechanics Symposium, First, Trondheim, Norway, Aug. 20-22, 1990. Proceedings. Edited by J.S. Chung, S. Berg, B.J. Natvig and J. Wardenier, Golden, CO, International Society of Offshore and Polar Engineers, 1990, p.517-520, 4 refs.

Ice strength, Ice (construction material), Artificial ice, Fracturing, Ice cracks, Ice solid interface, Compressive properties, Ice mechanics

50-98

Drifting ice forces on offshore piles.

Afanas'ev, V.P., Afanas'ev, S.V., European Offshore Mechanics Symposium, First, Trondheim, Norway, Aug. 20-22, 1990. Proceedings. Edited by J.S. Chung, S. Berg, B.J. Natvig and J. Wardenier, Golden, CO, International Society of Offshore and Polar Engineers, 1990, p.521-526, 21 refs.

Ice solid interface, Ice cover, Ice loads, Piles, Compressive properties, Ice models, Mathematical models, Offshore structures, Ice mechanics

50-99

Contact force and damage evolution in a moving uniaxial ice bar.

Shin, J.G., Karr, D.G., European Offshore Mechanics Symposium, First, Trondheim, Norway, Aug. 20-22, 1990. Proceedings. Edited by J.S. Chung, S. Berg, B.J. Natvig and J. Wardenier, Golden, CO, International Society of Offshore and Polar Engineers, 1990, p.527-532, 13 refs.

Ice loads, Damage, Mathematical models, Ice solid interface, Ice models, Loads (forces), Ice cracks

50-100

Pipeline stability in an ice-scoured seabed.

Clark, J.I., Paulin, M.J., Poorooshasb, F., European Offshore Mechanics Symposium, First, Trondheim, Norway, Aug. 20-22, 1990. Proceedings. Edited by J.S. Chung, S. Berg, B.J. Natvig and J. Wardenier, Golden, CO, International Society of Offshore and Polar Engineers, 1990, p.533-549, 27 refs.

Ice scoring, Icebergs, Ocean bottom, Subsurface structures, Underground pipelines, Offshore structures

50-101

Investigation of sea ice shear properties.

Zanegin, V.G., Khrapatyĭ, N.G., Liubimov, V.S., European Offshore Mechanics Symposium, First, Trondheim, Norway, Aug. 20-22, 1990. Proceedings. Edited by J.S. Chung, S. Berg, B.J. Natvig and J. Wardenier, Golden, CO, International Society of Offshore and Polar Engineers, 1990, p.550-555, 8 refs.

Sea ice, Shear stress, Cohesion, Internal friction, Ice solid interface, Offshore structures, Shear strength, Ice cover strength, Ice loads

50-102
Multiaxial creep of saline ice.
Golubov, A.I., Razbegin, V.N., Slepak, M.E., European Offshore Mechanics Symposium, First, Trondheim, Norway, Aug. 20-22, 1990. Proceedings. Edited by J.S. Chung, S. Berg, B.J. Natvig and J. Wardenier, Golden, CO, International Society of Offshore and Polar Engineers, 1990, p.556-561, 14 refs.
Salt ice, Ice creep, Ice models, Mathematical models, Ice strength, Shear stress, Shear strain, Ice solid interface, Offshore structures, Stress strain diagrams

50-103
Stability of underground openings in the storage of low and high temperature materials.
Inada, Y., Comprehensive rock engineering: principles, practice & projects, Vol.2, Analysis and design methods, edited by C. Fairhurst, Oxford, England, Pergamon Press Ltd, 1993, p.439-464 (Pertinent p.439-452), 24 refs.
DLC TA706.C642 1993, vol.2
Rocks, Underground storage, Ice physics, Ice thermal properties

50-104
Design and construction of underground hydraulic structures in permafrost.
Gevirts, G.IA., Comprehensive rock engineering: principles, practice & projects, Vol.2, Analysis and design methods, edited by C. Fairhurst, Oxford, England, Pergamon Press Ltd, 1993, p.501-527, 11 refs.
DLC TA706.C642 1993, vol.2
Subsurface structures, Hydraulic structures, Permafrost thermal properties, Permafrost physics, Tunnels

50-105
United States Antarctic Program.
Roberts, C.A., Lynch, J.T., Chiang, E., *Society of Automotive Engineers. SAE technical paper series.* 1994, No.941609, 8p., Prepared for the International Conference on Environmental Systems, 24th, Session ES08, Friedrichshafen, Germany, June 20-23, 1994. 5 refs.
Research projects, Low temperature research, Ice runways, Cold weather construction, Logistics, Atmospheric physics, Antarctica—Amundsen-Scott Station, Antarctica—McMurdo Station, Antarctica—Palmer Station
The National Science Foundation (NSF) has responsibility for the management, funding, and operation of the United States Antarctic Program (USAP), the U.S. national research program in Antarctica. The program is multifaceted, having international obligations under the Antarctic Treaty, providing grantees funding for antarctic scientific research, and providing the necessary operational and logistical support to researchers to execute their programs. The latter includes building, maintaining, and operating all research stations, camps, and other facilities, and operating two research vessels, ski-equipped C-130 aircraft, and helicopters. In the 1993-94 season, several challenging science projects were conducted. Astronomy and astrophysics efforts among these included projects under CARA (Center for Astrophysical Research in Antarctica) and AMANDA (Antarctic Muon and Neutrino Detector Array). These two examples are in the initial stages of their work, and will continue for some time. The paper describes CARA and AMANDA, and the logistics and operational support that are required to sustain them. Long-duration ballooning experiments, where large balloons circumnavigate the antarctic continent for up to two weeks at a time, are also discussed. In some cases, these give astrophysical data comparable to data obtained from space shuttle flights. (Auth. mod.)

50-106
Microalgal light-harvesting in extreme low-light environments in McMurdo Sound, Antarctica.
Robinson, D.H., Arrigo, K.R., Iturriaga, R., Sullivan, C.W., *Journal of phycology,* Aug. 1995, 31(4), p.508-520, Refs. p.518-520.
Algae, Ice cover effect, Photosynthesis, Light (visible radiation), Sea ice, Antarctica—McMurdo Sound
Microalgal pigment composition, photosynthetic characteristics, single-cell absorption efficiency spectra, and fluorescence-excitation (FE) spectra were determined for platelet ice and benthic communities underlying fast ice in McMurdo Sound during austral spring 1988. Measurements of spectral irradiance and photosynthetically active radiation (PAR) as well as samples for particulate absorption measurements were taken directly under the congelation ice, within the platelet layer, as profiles vertically through the water column, and at the benthic surface. Light attenuation by sea ice, algal pigments, and particulates reduced PAR reaching the platelet ice layer to 3% of surface values and narrowed its spectral distribution to a band between 400 and 580 nm. Attenuation by the water column further reduced PAR reaching the sea floor (28 m depth) to 0.05% of surface levels, with a spectral distribution dominated by 470-580 nm wavelengths. Results suggest that underice algae employ complementary pigmentation and maximize absorption efficiency as adaptive strategies to low-light stress. Regulating the distribution of absorbed energy between PSI and PSII may be an adaptive response to the restricted spectral distribution of irradiance. (Auth. mod.)

50-107
Engineering-geocryological problems in Transbaikal; collected scientific papers. [Inzhenerno-geokriologicheskie problemy Zabaĭkal'ia; sbornik nauchnykh trudov]
Shesternev, D.M., ed, Moscow, Nauka, 1993, 110p., In Russian. Refs. passim. For individual papers see 50-108 through 50-131.
Engineering geology, Geocryology, Foundations, Seasonal freeze thaw, Frozen ground, Rock streams, Deformation, Russia—Transbaikal

50-108
Characteristics of the geocryological conditions of Transbaikal, engineering-geocryological problems and ways of solving them. [Kharakteristika geokriologicheskikh usloviĭ Zabaĭkal'ia, inzhenerno-geokriologicheskie problemy i puti ikh resheniia]
Shesternev, D.M., Aleksandrov, A.S., Inzhenerno-geokriologicheskie problemy Zabaĭkal'ia; sbornik nauchnykh trudov (Engineering-geocryological problems in Transbaikal; collected scientific papers). Edited by D.M. Shesternev, Moscow, Nauka, 1993, p.4-15, In Russian. 8 refs.
Geocryology, Engineering geology, Seasonal freeze thaw, Foundations, Buildings, Deformation, Russia—Transbaikal

50-109
High-temperature permafrost as building foundation. [Vysokotemperaturnye mnogoletnemerzlye grunty kak osnovaniia zdaniĭ]
Sal'nikov, P.I., Inzhenerno-geokriologicheskie problemy Zabaĭkal'ia; sbornik nauchnykh trudov (Engineering-geocryological problems in Transbaikal; collected scientific papers). Edited by D.M. Shesternev, Moscow, Nauka, 1993, p.15-18, In Russian. 2 refs.
Permafrost bases, Permafrost beneath structures, Buildings, Frozen ground temperature, Thermal regime, Permafrost thermal properties, Russia—Transbaikal

50-110
Prospects for using solar energy technology in engineering-geocryological practice in Transbaikal. [Perpsektivy ispol'zovaniia geliotekhniki v inzhenerno-geokriologicheskoĭ praktike v Zabaĭkal'e]
Zhelezniak, I.I., Dolgov, V.N., Inzhenerno-geokriologicheskie problemy Zabaĭkal'ia; sbornik nauchnykh trudov (Engineering-geocryological problems in Transbaikal; collected scientific papers). Edited by D.M. Shesternev, Moscow, Nauka, 1993, p.19-21, In Russian. 5 refs.
Solar radiation, Geocryology, Engineering geology, Surface temperature, Thermal regime, Soil temperature, Sands, Frozen ground temperature, Heat transfer coefficient, Heat capacity, Russia—Transbaikal

50-111
Characteristics of working in permafrost in Transbaikal. [Osobennosti razrabotki mnogoletnemerzlykh porod v Zabaĭkal'e]
Kozlov, V.A., Glushkov, IU.P., Inzhenerno-geokriologicheskie problemy Zabaĭkal'ia; sbornik nauchnykh trudov (Engineering-geocryological problems in Transbaikal; collected scientific papers). Edited by D.M. Shesternev, Moscow, Nauka, 1993, p.21-24, In Russian.
Mining, Excavation, Permafrost, Peat, Russia—Transbaikal

50-112
Effect of cryogenic processes on the construction and operation of railroads in Transbaikal. [Vliianie kriogennykh protsessov na stroitel'stvo i ekspluatatsiiu zheleznykh dorog v Zabaĭkal'e]
Shesterneva, M.K., Inzhenerno-geokriologicheskie problemy Zabaĭkal'ia; sbornik nauchnykh trudov (Engineering-geocryological problems in Transbaikal; collected scientific papers). Edited by D.M. Shesternev, Moscow, Nauka, 1993, p.24-29, In Russian. 9 refs.
Geocryology, Railroads, Cold weather construction, Cold weather operation, Russia—Transbaikal

50-113
Cryogenic-engineering-geological typification of a territory according to frost heave formation conditions (as applied to linear structures). [Merzlotno-inzhenerno-geologicheskaia tipizatsiia territorii po usloviiam puchinoobrazovaniia (primenitel'no k lineĭnym sooruzheniiam)]
Verkhozin, I.I., Leshchikov, F.N., Inzhenerno-geokriologicheskie problemy Zabaĭkal'ia; sbornik nauchnykh trudov (Engineering-geocryological problems in Transbaikal; collected scientific papers). Edited by D.M. Shesternev, Moscow, Nauka, 1993, p.30-33, In Russian.
Geocryology, Engineering geology, Frost heave, Cold weather operation, Cold weather construction, Slope orientation, Deformation, Countermeasures, Plains, Landscape types

50-114
Some examples of stationary investigations of cryogenic processes in Transbaikal. [Nekotorye priemy statsionarnykh issledovaniĭ kriogennykh protsessov v Zabaĭkal'e]
Poznanin, V.L., IAdrishchenskiĭ, G.E., Inzhenerno-geokriologicheskie problemy Zabaĭkal'ia; sbornik nauchnykh trudov (Engineering-geocryological problems in Transbaikal; collected scientific papers). Edited by D.M. Shesternev, Moscow, Nauka, 1993, p.33-38, In Russian. 3 refs.
Geocryology, Suprapermafrost ground water, Water pressure, Ice pressure, Pressure, Russia—Transbaikal

50-115
Effect of seasonal freezing on the formation of naleds in northern Transbaikal. [Vliianie sezonnogo promerzaniia na naledeobrazovanie v severnom Zabaĭkal'e]
Beliakov, A.E., Inzhenerno-geokriologicheskie problemy Zabaĭkal'ia; sbornik nauchnykh trudov (Engineering-geocryological problems in Transbaikal; collected scientific papers). Edited by D.M. Shesternev, Moscow, Nauka, 1993, p.38-40, In Russian. 2 refs.
Seasonal freeze thaw, Naleds, River basins, Ground water, Russia—Transbaikal, Russia—Sakukan River

50-116
Method of interpreting rock streams from aerial photographs (AFS). [K metodike deshifrirovaniia kurumov po aerofotosnimkam (AFS)]
Ryzhikh, A.M., IAdrishchenskiĭ, G.E., Senuk, D.P., Inzhenerno-geokriologicheskie problemy Zabaĭkal'ia; sbornik nauchnykh trudov (Engineering-geocryological problems in Transbaikal; collected scientific papers). Edited by D.M. Shesternev, Moscow, Nauka, 1993, p.40-42, In Russian. 3 refs.
Rock streams, Aerial surveys, Photointerpretation, Spaceborne photography

50-117
Dependence of the intensity of rock stream development in northern Transbaikal on the geomorphological-tectonic features of the region. [Zavisimost' intensivnosti razvitiia kurumov v severnom Zabaĭkal'e ot geomorfologo-tektonicheskikh osobennosteĭ regiona]
Mal'chikova, I.IU., Inzhenerno-geokriologicheskie problemy Zabaĭkal'ia; sbornik nauchnykh trudov (Engineering-geocryological problems in Transbaikal; collected scientific papers). Edited by D.M. Shesternev, Moscow, Nauka, 1993, p.43-46, In Russian.
Rock streams, Geomorphology, Geocryology, Tectonics, Weathering, Slope orientation, Russia—Transbaikal

50-118
Ice accumulation in rock streams of northern Transbaikal. [L'donakoplenie v kurumakh severnogo Zabaĭkal'ia]
Verkhoturov, A.G., Inzhenerno-geokriologicheskie problemy Zabaĭkal'ia; sbornik nauchnykh trudov (Engineering-geocryological problems in Transbaikal; collected scientific papers). Edited by D.M. Shesternev, Moscow, Nauka, 1993, p.46-50, In Russian. 5 refs.
Rock streams, Seasonal freeze thaw, Slope orientation, Geomorphology, Cryogenic textures, Russia—Transbaikal

50-119

Mathematical analysis of the flow of soils down a slope. [Raschetnaia otsenka techeniia gruntov po sklonu]

Petrov, V.S., Petrova, M.A., Inzhenerno-geokriologicheskie problemy Zabaĭkal'ia; sbornik nauchnykh trudov (Engineering-geocryological problems in Transbaikal; collected scientific papers). Edited by D.M. Shesternev, Moscow, Nauka, 1993, p.50-52, In Russian. 3 refs.

Analysis (mathematics), Slope processes, Ground thawing, Viscoelasticity, Deformation, Rheology

50-120

On the granulometric composition of coarse detrital rocks. [K voprosu o granulometricheskom sostave krupnooblomochnykh porod]

Shesternev, D.M., Inzhenerno-geokriologicheskie problemy Zabaĭkal'ia; sbornik nauchnykh trudov (Engineering-geocryological problems in Transbaikal; collected scientific papers). Edited by D.M. Shesternev, Moscow, Nauka, 1993, p.52-62, In Russian. 19 refs.

Rocks, Grain size, Terminology, Geocryology, Russia—Transbaikal

50-121

Regularities in the changes in composition of coarse detrital rocks without aggregates in the section of daily temperature variations of the Udokan territory. [Zakonomernosti izmeneniia sostava krupnooblomochnykh porod bez zapolnitelia v sloe sutochnykh kolebaniĭ temperatur na territorii Udokana]

Druzhinin, A.S., Shesterneva, M.K., Inzhenerno-geokriologicheskie problemy Zabaĭkal'ia; sbornik nauchnykh trudov (Engineering-geocryological problems in Transbaikal; collected scientific papers). Edited by D.M. Shesternev, Moscow, Nauka, 1993, p.63-66, In Russian. 3 refs.

Rocks, Temperature variations, Aggregates, Geocryology, Russia—Udokan Range

50-122

Effect of the structure of the seasonal thaw layer in rocks on their deformation properties. [Vliianie struktury sloia sezonnogo ottaivaniia porod na formirovanie ikh deformatsionnykh svoĭstv]

Khamin, M.N., Inzhenerno-geokriologicheskie problemy Zabaĭkal'ia; sbornik nauchnykh trudov (Engineering-geocryological problems in Transbaikal; collected scientific papers). Edited by D.M. Shesternev, Moscow, Nauka, 1993, p.66-69, In Russian. 5 refs.

Active layer, Seasonal freeze thaw, Frozen rocks, Ground thawing, Deformation, Geocryology

50-123

General morphogenetic classification of the cryogenic textures of coarse detrital rocks. [Obshchaia morfogeneticheskaia klassifikatsiia kriogennykh tekstur krupnooblomochnykh porod]

Shesternev, D.M., Inzhenerno-geokriologicheskie problemy Zabaĭkal'ia; sbornik nauchnykh trudov (Engineering-geocryological problems in Transbaikal; collected scientific papers). Edited by D.M. Shesternev, Moscow, Nauka, 1993, p.69-75, In Russian. 15 refs.

Classifications, Rock properties, Cryogenic structures, Cryogenic textures

50-124

Sounding methods to determine the thermophysical properties of frozen ground massifs and bedrock in mining operations. [Zondovye metody opredeleniia teplofizicheskikh svoĭstv massiva merzlykh gruntov i skal'nykh porod v gornykh vyrabotkakh]

Gavril'ev, R.I., Inzhenerno-geokriologicheskie problemy Zabaĭkal'ia; sbornik nauchnykh trudov (Engineering-geocryological problems in Transbaikal; collected scientific papers). Edited by D.M. Shesternev, Moscow, Nauka, 1993, p.75-82, In Russian. 6 refs.

Remote sensing, Sounding, Mining, Frozen ground, Bedrock, Analysis (mathematics), Thermal conductivity, Frozen ground thermodynamics

50-125

Compressibility of thawing ground. [Szhimaemost' ottaivaiushchikh gruntov]

Petrov, V.S., Inzhenerno-geokriologicheskie problemy Zabaĭkal'ia; sbornik nauchnykh trudov (Engineering-geocryological problems in Transbaikal; collected scientific papers). Edited by D.M. Shesternev, Moscow, Nauka, 1993, p.82-86, In Russian. 2 refs.

Compressive properties, Ground thawing, Active layer, Frozen ground compression, Porosity

50-126

Evaluating compressibility during the thawing of perennially frozen alluvial loams in Chita according to their physical characteristics. [Otsenka szhimaemosti pri ottaivanii mnogoletnemerzlykh eliuvial'nykh suglinkov Chity po ikh fizicheskim kharakteristikam]

Torgashev, V.V., Sal'nikov, P.I., Shcherbakova, I.P., Alekseeva, I.P., Kalashnikov, A.N., Inzhenerno-geokriologicheskie problemy Zabaĭkal'ia; sbornik nauchnykh trudov (Engineering-geocryological problems in Transbaikal; collected scientific papers). Edited by D.M. Shesternev, Moscow, Nauka, 1993, p.86-88, In Russian. 7 refs.

Compressive properties, Alluvium, Loams, Ground thawing, Frozen ground physics

50-127

Mechanism for consolidating ice and saline frozen ground with polyvinyl alcohol admixtures. [Mekhanizm uprochneniia l'da i zasolennogoo merzlogo grunta dobavkami polivinilovogo spirta]

Cheverev, V.G., Gagarin, V.E., Panchenko, V.I., Torbin, V.V., Inzhenerno-geokriologicheskie problemy Zabaĭkal'ia; sbornik nauchnykh trudov (Engineering-geocryological problems in Transbaikal; collected scientific papers). Edited by D.M. Shesternev, Moscow, Nauka, 1993, p.89-94, In Russian. 2 refs.

Admixtures, Saline soils, Frozen ground compression, Ice density, Ice strength, Polymers, Freezing

50-128

Borehole method of determining the ice content and thermal properties of dispersed rocks. [Skvazhinnyĭ metod opredeleniia l'distosti i teplovykh svoĭstv dispersnykh porod]

Rashkin, A.V., Inzhenerno-geokriologicheskie problemy Zabaĭkal'ia; sbornik nauchnykh trudov (Engineering-geocryological problems in Transbaikal; collected scientific papers). Edited by D.M. Shesternev, Moscow, Nauka, 1993, p.94-98, In Russian. 2 refs.

Boreholes, Rock properties, Thermal properties, Heat balance, Frozen rocks, Thawing, Thermal properties

50-129

Results from experimental studies on resistance of a normal load of thawing ground under sharp bored cast-in-situ piles. [Rezul'taty eksperimental'nykh issledovaniĭ soprotivleniia normal'noĭ nagruzke ottaivaiushchikh gruntov pod ostriem burozabivnykh svaĭ]

Torgashev, V.V., Inzhenerno-geokriologicheskie problemy Zabaĭkal'ia; sbornik nauchnykh trudov (Engineering-geocryological problems in Transbaikal; collected scientific papers). Edited by D.M. Shesternev, Moscow, Nauka, 1993, p.98-103, In Russian. 7 refs.

Ground thawing, Loads (forces), Piles, Sands, Frozen ground strength

50-130

Experimental studies on the interaction of surface foundations on fills with heaving soils. [Eksperimental'nye issledovaniia vzaimodeĭstviia nezaglublennykh fundamentov na podsypkakh s puchinistymi gruntami]

Elgin, B.B., Kozel, A.M., Inzhenerno-geokriologicheskie problemy Zabaĭkal'ia; sbornik nauchnykh trudov (Engineering-geocryological problems in Transbaikal; collected scientific papers). Edited by D.M. Shesternev, Moscow, Nauka, 1993, p.103-106, In Russian.

Foundations, Frost heave, Earth fills

50-131

Significance of factors in a foundation-fill-heaving base. [Znachimost' faktorov sistemy fundament-podsypka-puchinistoe osnovanie]

Babello, V.A., Zhuravlev, N.A., Inzhenerno-geokriologicheskie problemy Zabaĭkal'ia; sbornik nauchnykh trudov (Engineering-geocryological problems in Transbaikal; collected scientific papers). Edited by D.M. Shesternev, Moscow, Nauka, 1993, p.107-109, In Russian. 4 refs.

Foundations, Earth fills, Frost heave, Analysis (mathematics)

50-132

Calculating thermal and water resources of small river catchment areas in Siberia. Part 2: Water balance and water resources. [Raschety teplovykh i vodnykh resursov malykh rechnykh vodosborov na territorii Sibiri. Chast 2: Vodnyĭ balans i vodnye resursy]

Karnatsevich, I.V., Omsk, OmSKhI, 1991, 79p., In Russian with English summary. 151 refs. For part 1 see 50-133.

Water balance, Hydrology, River basins, Runoff, Russia—Siberia

50-133

Calculating thermal and water resources of small river catchment areas in Siberia. Part 1: Thermal energy resources of the climate and climatic processes. [Raschety teplovykh i vodnykh resursov malykh rechnykh vodosborov na territorii Sibiri. Chast 1: Teploenergetichekie resursy klimata i klimaticheskikh protsessov]

Karnatsevich, I.V., Omsk, OmSKhI, 1989, 75p., In Russian with English summary. 95 refs. For part 2 see 50-132.

Heat flux, Climatology, Geocryology, Thermal radiation, Russia—Siberia

50-134

Time series in geocryology. [Vremennye riady v geokriologii]

Mel'nikov, V.P., Tsibul'skiĭ, V.R., Kitaev, V.V., Novosibirsk, Nauka, 1992, 110p. + suppl., In Russian. Refs. p.85-87.

Geocryology, Permafrost, Frozen ground temperature, Surface temperature, Frost penetration, Snow depth, Computer programs, Mathematical models

50-135

Total ozone concentrations during the antarctic spring anomaly of 1989. [Nekotorye rezul'taty issledovaniia obshchego soderzhaniia ozona v period vesenneĭ antarkticheskoĭ anomalii 1989 g.]

Brezgin, N.I., et al, *Moscow. Tsentral'naia aerologicheskaia observatoriia. Trudy,* 1992, Vol.179, p.3-11, In Russian with English summary. 5 refs.

Ozone, Atmospheric composition, Air temperature, Wind (meteorology), Atmospheric pressure, Antarctica—Molodezhnaya Station

Results of total ozone measurements at Molodezhnaya Station and during the 46th cruise of the research vessel *Akademic Shirshov* from Aug. to Nov. 1989 are presented. Baric contour maps and the cross-section of zonal and meridional components of wind above Molodezhnaya for the period of investigation are provided. (Auth.)

50-136

Mesospheric ozone investigations in south polar regions. [Nekotorye predvaritel'nye rezul'taty issledovaniia ozona v mezosfere iuzhnogo poliarnogo raĭona]

Brezgin, N.I., Sazonov, V.V., Chizhov, A.F., *Moscow. Tsentral'naia aerologicheskaia observatoriia. Trudy,* 1992, Vol.179, p.34-44, In Russian with English summary. 15 refs.

Ozone, Atmospheric composition, Air temperature, Antarctica—Molodezhnaya Station

Mesospheric ozone measurements, obtained by SFM-1 instruments aboard the satellite Meteor and rocketborne photometer at Molodezhnaya Station from 1985 to 1988, are analyzed. Considerable seasonal variations of ozone concentrations in the 55-80 km altitude range were found. These, and atmospheric temperature, were obtained by standard rocket measurements at Molodezhnaya Station.

50-137

CAO data on the dependence of ozone density and relative mixture on angle of maximum solar elevation. [Zavisimost' kontsentratsii i otnosheniia smesi ozona ot maksimal'noĭ vysoty solntsa po dannym raketnykh opticheskikh ozonometrov TAO]
Poliakova, E.A., Chizhov, A.F., *Moscow: Tsentral'naia aerologicheskaia observatoriia. Trudy,* 1992, Vol.179, p.45-54, In Russian with English summary. 8 refs.

Ozone, Solar radiation, Atmospheric composition, Antarctica—Molodezhnaya Station

Analysis of ozone optical measurements, obtained in the 40-50 km altitude range above Molodezhnaya Station, is presented. The dependence of ozone density and relative mixture on the elevation of the sun at local noon is discussed.

50-138

Antarctic journal of the United States, vol.28, no.4. Washington, D.C., U.S. National Science Foundation, 1993, 23p.

Research projects, Ice sheets, Ice creep, Data processing, Waste disposal, Antarctica—McMurdo Dry Valleys

Status reports of on-going projects give these updates: a new collection network of remotely sensed sea ice data provides swift availability of ice conditions for ship operations: an October 1993 report shows ozone losses over the South Pole and subsequent increased levels of UV radiation. Instrumented balloons provided additional data; progress of the NSF long-term ecological research program (LTER) is reported along with the continuing research in the McMurdo Dry Valleys; volcanic activity under the ice streams of West Antarctica; the astrophysical research effort at the South Pole Observatory to discover the early structure of the universe; the University of Washington studies of climate processes over the Antarctic Plateau; letters debating the ancient antarctic forests; opening of a joint NSF, USGS, University of Colorado ice core laboratory in Lakewood, CO; NSF grant awards for the period 1 June through 31 Aug.; weather summaries at McMurdo, Amundsen-Scott, and Palmer Stations for Aug./Sep./Oct. 1993.

50-139

Antarctic journal of the United States, vol.29, no.1. Washington, D.C., U.S. National Science Foundation, 1994, 23p.

Research projects, Agriculture, Sea ice, Snow physics, Ice physics, Antarctica—McMurdo Dry Valleys, Antarctica—Amundsen Sea, Antarctica—Bellingshausen Sea, Antarctica—Weddell Sea

This issue of the AJUS provides an array of unusual kinds of report topics, starting with the Dry Valleys rock microorganism display at the Smithsonian Institution and continuing with the hydroponic gardening experiment at McMurdo and Amundsen-Scott Stations; a series of four reports of the *Nathaniel B. Palmer* ice activities in the Bellingshausen and Amundsen Seas; the ANZFLUX experiment studying winter interactions between the atmosphere, ice, and waters above, atop, and within the Weddell Sea; a set of newsbriefs from The Ice; and an *Ave et Vale* to the U.S. Naval Construction Battalions (Seabees) who, after a long and honorable participation, will no longer be a major player in the antarctic adventure. A list of NSF funding awards for the period Sep. 1 through Nov. 30, 1993 is included.

50-140

Antarctic journal of the United States, vol. 29, no.3. Washington D.C., U.S. National Science Foundation, 1994, 31p.

Research projects

Several brief paragraphs highlight individual projects scheduled for the 1994-1995 summer season. On tap are four live telecasts via satellite from the ice; a new submillimeter telescope at South Pole; a robot ice edge explorer; ice core libraries; sub-ice sheet geophysics; a Ross Sea polynya; Lake Vanda chemistry and biology; and microalgae living in the sea ice at the edge of McMurdo Sound. These are followed by summaries of individual projects with principal investigators and their affiliations identified. The projects cover a wide spectrum of disciplines including biology and medicine, geology and geophysics, glaciology, ocean studies, climatology, astronomy and astrophysics, and ozone depletion. Nearly 500 scientists are involved in about 90 projects. A listing of NSF funding awards for the period Mar. 1 through May 31, 1994 concludes the issue.

50-141

Climate changes predicted by climate models for the increase of greenhouse gases.
Tokioka, T., *Progress in nuclear energy,* 1995, Vol.29 (Supplement), International Symposium on Global Environment and Nuclear Energy Systems, Susono Shizuoka, Japan, Oct. 24-27, 1994, edited by A. Shimizu, p.151-158, 11 refs.

Climatic changes, Atmospheric composition, Models

Climate models have been used to predict climate changes caused by the increase of greenhouse gases. Models predict physical states of the upper part of the earth including the atmosphere, the ocean, the land surface and the cryosphere with the use of physical laws. When the atmospheric concentration of CO_2 is doubled, globally averaged surface temperature is predicted to increase 1.5 to 4.5°C. Temperature increase is most dominant in winter in high latitudes due mainly to sea ice-albedo and snow-albedo feedbacks. Geographically, it is dominant over continents in high latitudes. The hydrological cycle is activated; precipitation is divided into two types, i.e., precipitation from cumuliform clouds and that from stratiform clouds. The former (latter) type increases (decreases) in a globally averaged sense. Therefore the precipitating area decreases while the precipitation amount increases. In summer, many models predict a decrease in soil moisture in mid-latitudes. When atmospheric CO_2 concentration increases at the compound rate of 1% per year, the globally averaged surface temperature increase is about 60% of the equilibrium value, i.e., 0.9-2.7°C. The remaining 40% is for potential future increase. (Auth. mod.)

50-142

Salted drilling mud helps prevent casing collapse in permafrost.

Kutasov, I.M., *Oil & gas journal,* July 31, 1995, 93(31), p.87-88, 2 refs.

Well casings, Drilling fluids, Mud, Permafrost, Salting, Analysis (mathematics)

50-143

Storebælt - the final chapters.

Wallis, S., *World tunnelling,* May 1995, 8(4), p.151-155.

Tunneling (excavation), Soil freezing, Frozen ground, Fires, Denmark—Storebælt Strait

50-144

Thirtieth Soviet Antarctic Expedition. Winter studies of 1984-1985. [Tridtsataia Sovetskaia antarkticheskaia ekspeditsiia. Zimovochnye issledovaniia 1984/85 g.]

Sovetskaia antarkticheskaia ekspeditsiia, Galkin, R.M., ed, *Sovetskaia antarkticheskaia ekspeditsiia. Trudy,* 1992, Vol.88, 128p., In Russian. Refs. passim. For individual papers see 50-145 through 50-149 or F-53590, F-53591, F-53594, F-53595, H-53592, H-53593, I-53588 and I-53589.

Low temperature research, Expeditions, Logistics, Glacial meteorology, Glaciology

This volume contains information on observations and results of scientific efforts carried out by the 30th Soviet Antarctic Expedition on the antarctic continent and surrounding waters from Jan. 1985 to Apr. 1986. Seasonal activities and organization of the expedition, including logistic support and contact with other expeditions, are outlined in the first part of the book. A chronological account of the events, beginning with the Expedition's departure from Vladivostok on Oct. 23, 1984 and ending on Apr. 1, 1985, is included in this section. The second part consists of 8 papers giving the scientific results of projects in hydrometeorology, glaciology, and medicine.

50-145

Development of hydrometeorological processes over Antarctica in 1985. [Osobennosti razvitiia gidrometeorologicheskikh protsessov nad Antarktikoĭ v 1985 g.]

Savitskiĭ, G.B., *Sovetskaia antarkticheskaia ekspeditsiia. Trudy,* 1992, Vol.88, p.60-65, In Russian.

Atmospheric circulation, Atmospheric disturbances, Sea ice distribution

From hydrometeorological data, and surface and altitude charts on ice type and conditions, characteristics of atmospheric and ice processes in Antarctica were determined, and some of their general characteristics in 1985 are discussed. Monthly data are presented on atmospheric circulation, the main trajectory of cyclonic occurrences, and the average monthly distribution of drifting ice.

50-146

Effect of temperature and density on snow cover stability of the runway at Molodezhnaya Station. [Vliianie temperatury i plotnosti na prochnost' snezhnogo pokrytiia aerodroma AMTS Molodezhnaya]

Nazarov, V.D., *Sovetskaia antarkticheskaia ekspeditsiia. Trudy,* 1992, Vol.88, p.68-73, In Russian. 3 refs.

Snow cover stability, Snow temperature, Snow density, Ice runways, Antarctica—Molodezhnaya Station

A link between stability and density of artificially compacted snow, not subjected to melting, was determined at temperatures close to 0°C. It is concluded that, at snow cover densities >550 kg/cu m, the runway at Molodezhnaya Station can be used by Il-76TD aircraft even at snow temperatures close to 0°C.

50-147

Some characteristics of the temperature regime of the artificially compacted snow layer on the runway at Molodezhnaya Station. [Nekotorye osobennosti temperaturnogo rezhima iskusstvenno uplotnennoĭ snezhnoĭ tolshchi aerodroma AMTS Molodezhnaia]

Nazarov, V.D., *Sovetskaia antarkticheskaia ekspeditsiia. Trudy,* 1992, Vol.88, p.74-81, In Russian. 2 refs.

Snow air interface, Air temperature, Snow temperature, Wind factors, Ice runways, Antarctica—Molodezhnaya Station

Investigations carried out in naturally layered and artificially compacted snow in Gora Vechernaya showed a relationship between the snow temperature, thickness, and the seasonal atmospheric temperature variations.

50-148

Spring and summer radiation regime in artificially compacted snow. [Osobennosti radiatsionnogo rezhima iskusstvenno uplotnennogo snega v vesenne-letniĭ period]

Nazarov, V.D., *Sovetskaia antarkticheskaia ekspeditsiia. Trudy,* 1992, Vol.88, p.110-120, In Russian. 20 refs.

Snow density, Snow cover structure, Snow air interface, Solar radiation, Ice runways, Antarctica—Molodezhnaya Station

The main features of the penetration, absorption and scattering of solar radiation in artificially compacted snow cover on the Molodezhnaya runway and in naturally layered snow cover are compared.

50-149

Artificially compacted snow and temperature regime in a glacier active layer. [Vliianie iskusstvennogo uplotneniia snega na temperaturnyĭ rezhim aktivnogo sloia lednika]

Nazarov, V.D., *Sovetskaia antarkticheskaia ekspeditsiia. Trudy,* 1992, Vol.88, p.121-124, In Russian. 2 refs.

Snow ice interface, Active layer, Glacier ice, Ice temperature, Snow compaction, Ice runways, Antarctica—Molodezhnaya Station

Temperature variations in a glacier active layer, and their relation to several-years-standing artificially compacted snow over the runway at Molodezhnaya Station, are discussed. The snow cover is found to have a marked effect on the temperature regime of the underlying nrn layer, increasing the thickness of the active layer and decreasing its temperature.

50-150

Defect activity in amorphous ice from isotopic exchange data: insight into the glass transition.

Fisher, M., Devlin, J.P., *Journal of physical chemistry,* July 20, 1995, 99(29), p.11584-11590, 21 refs.

Ice physics, Amorphous ice, Doped ice, Phase transformations, Isotope analysis, Molecular structure, Molecular energy levels, Defects, Ice spectroscopy, Proton transport

50-151

Kinetics of freezing of dimethylacetylene. An electron diffraction study.

Huang, J.F., Lu, W.Q., Bartell, L.S., *Journal of physical chemistry,* July 13, 1995, 99(28), p.11147-11152, 44 refs.

Frozen liquids, Hydrocarbons, Supercooling, Freezing, Phase transformations, Nucleation rate, Freezing rate, Molecular structure, Temperature measurement, Thermodynamic properties, Temperature effects

50-152

Linearity between structural correlation length and correlated-proton Raman intensity from amorphous ice and supercooled water up to dense supercritical steam.

Walrafen, G.E., Chu, Y.C., *Journal of physical chemistry,* July 13, 1995, 99(28), p.11225-11229, 33 refs.

Ice physics, Ice spectroscopy, Water structure, Ice water interface, Temperature effects, Ice structure, Molecular structure, Protons, Supercooling, Amorphous ice, Phase transformations, Correlation

50-153

Hydrophobic slowdown and hydrophilic speedup of water rotation in supercooled aqueous solutions of benzene and phenol.

Nakahara, M., Yoshimoto, Y., *Journal of physical chemistry,* July 6, 1995, 99(27), p.10698-10700, 18 refs.

Liquid cooling, Solutions, Supercooling, Temperature effects, Heavy water, Molecular structure, Molecular energy levels, Nuclear magnetic resonance

50-154

Photochemistry of chlorine dioxide in ice.

Pursell, C.J., Conyers, J., Alapat, P., Parveen, R., *Journal of physical chemistry,* June 29, 1995, 99(26), p.10433-10437, 28 refs.

Ice physics, Photochemical reactions, Amorphous ice, Ice vapor interface, Ice spectroscopy, Ultraviolet radiation, Phase transformations, Atmospheric attenuation, Stratosphere, Simulation

50-155

Shear viscosity and self-diffusion evidence for high concentrations of hydrogen-bonded clathrate-like structures in very highly supercooled liquid water.

Walrafen, G.E., Chu, Y.C., *Journal of physical chemistry,* June 29, 1995, 99(26), p.10635-10643, 56 refs.

Water structure, Supercooling, Liquid cooling, Molecular structure, Clathrates, Hydrogen bonds, Molecular energy levels, Self diffusion, Thermodynamic properties, Models

50-156

Kinetic and internal energy distributions of molecular hydrogen produced from amorphous ice by impact of 100 eV electrons.

Kimmel, G.A., Tonkyn, R.G., Orlando, T.M., *Nuclear instruments and methods in physics research B,* June 1995, 101(1-2), International Workshop on Desorption Induced by Electronic Transitions, 6th, Krakow, Poland, Sep. 26-29, 1994, p.179-183, 24 refs.

Ice physics, Amorphous ice, Deuterium oxide ice, Molecular structure, Molecular energy levels, Ice erosion, Ice spectroscopy, Ionization

50-157

Nature of acoustic emission during phase transformations and adequacy of the Stefan condition.

Sakharov, I.I., *Journal of engineering physics and thermophysics,* Feb. 1995, 67(1-2), p.699-702, Translated from Inzhenerno-fizicheskii zhurnal. 6 refs.

Ice physics, Phase transformations, Ice microstructure, Stefan problem, Ice acoustics, Wave propagation, Elastic waves, Classifications, Latent heat

50-158

Moisture profiling of the cloudy winter atmosphere using combined remote sensors.

Stankov, B.B., Martner, B.E., Politovich, M.K., *Journal of atmospheric and oceanic technology,* June 1995, 12(3), p.488-510, 34 refs.

Cloud physics, Supercooled clouds, Moisture detection, Water content, Remote sensing, Radiometry, Profiles, Air temperature, Temperature variations

50-159

Subtidal and tidal currents in the vicinity of the Iceland-Faeroes front.

Allen, J.T., *Journal of atmospheric and oceanic technology,* June 1995, 12(3), p.567-588, 19 refs.

Oceanographic surveys, Subpolar regions, Tidal currents, Velocity measurement, Hydrography, Sounding, Fluid dynamics, Topographic effects, Mathematical models, Iceland Sea, Norwegian Sea

50-160

Measurements of the underside topography of sea ice by moored subsea sonar.

Melling, H., Johnston, P.H., Riedel, D.A., *Journal of atmospheric and oceanic technology,* June 1995, 12(3), p.589-602, 20 refs.

Oceanographic surveys, Ice surveys, Ice cover thickness, Sea ice distribution, Subglacial observations, Ice bottom surface, Ice water interface, Topographic features, Acoustic measurement, Wave propagation, Profiles, Beaufort Sea

50-161

Some active and passive microwave signatures of antarctic sea ice from mid-winter to spring 1991.

Gohin, F., *International journal of remote sensing,* July 20, 1995, 16(11), p.2031-2054, 24 refs.

Radiometry, Oceanography, Sea ice distribution, Spaceborne photography, Backscattering, Polarization (waves), Snow cover effect, Classifications, Ice detection, Analysis (mathematics), Ice optics

This paper compares dry-snow extinction coefficients derived from satellite radar altimeter data with brightness temperature data from passive microwave measurements over a portion of the East Antarctic plateau. A comparison between extinction coefficients and brightness temperatures shows a strong negative correlation, where the correlation coefficients ranged from -0.87 to -0.95. The large-scale trend shows that the extinction coefficient of dry polar snow decreases with increasing surface elevation, while the average brightness temperature increases with surface elevation. The analysis shows that the observed trends are related to geographical variations in scattering coefficient of snow, which in turn are controlled by variations in surface temperature and snow accumulation rate. By combining information present in the extinction coefficient and brightness temperature datasets, a simple semi-empirical model that can be used to obtain accumulation rate estimates of dry polar snow is developed. (Auth. mod.)

50-162

Synthesis of passive microwave and radar altimeter data for estimating accumulation rates of dry polar snow.

Davis, C.H., *International journal of remote sensing,* July 20, 1995, 16(11), p.2055-2067, 41 refs.

Climatology, Snow surveys, Snow accumulation, Surface temperature, Periodic variations, Remote sensing, Radar echoes, Radiometry, Snow optics, Brightness, Correlation, Antarctica—East Antarctica

Antarctic sea ice is often covered by a deep snow layer which acts as an emitter and a scatterer to microwave radiation leading to possible misinterpretations of ice signatures, particularly at high frequencies. The algorithms for ice identification, based on the observations of the Special Sensor Microwave Imager, at 19 GHz and 37 GHz polarization, have proven to be inefficient for distinguishing new and old ice over the antarctic ocean. At an equivalent resolution and analyzed on a weekly basis, complementary information can be obtained from active microwave measurements provided at 5.3 GHz by the Active Microwave Instrument, the scatterometer of ERS-1. Based on data obtained from the end of Aug. to the end of Nov. 1991 during the austral winter and spring, radar backscatter is analyzed as a function of the incident angle. At low incident angles, the derivative of the backscatter is closely related to the water concentration as derived from passive radiometry, whereas at high incident angles, the backscatter is mainly due to ice, as the water contribution is strongly reduced. During the whole period, stable features are apparent on the images obtained from the backscattering coefficients at 50°. On those images, higher values characterize the marginal ice zone, the polynya areas and the advected ice within the Ross Sea. (Auth. mod.)

50-163

Occurrence of sub-ice algal aggregations off northeast Greenland.

Gutt, J., *Polar biology,* 1995, 15(4), p.247-252, 21 refs.

Marine biology, Ecosystems, Oceanographic surveys, Sampling, Algae, Growth, Distribution, Ice bottom surface, Biomass, Greenland Sea

50-164

Recruitment of antarctic krill *Euphausia superba* and possible causes for its variability.

Siegel, V., Loeb, V., *Marine ecology progress series,* July 20, 1995, 123(1-3), p.45-56, 39 refs.

Marine biology, Sea ice, Antarctica—Elephant Island

Between-year variability of krill year class success and recruitment during the 1977 to 1994 period are described based on data from German expeditions and U.S. Antarctic Marine Living Resources Program cruises in the Elephant I. area. The recruitment index (R_1), based on the relative abundance of the 1+ age class, varies substantially between years, whereas it is quite similar between different surveys within the same field season. The overall mean recruitment index for all years was R_{mean}=0.210. Good recruitment was observed for the 1980-81, 1985-86, 1987-88, and 1990-91 year classes; poor recruitment occurred for the 1976-77, 1982-83, 1983-84, 1988-89, 1991-92 and 1992-93 year classes. Pairwise correlations between the stock parameters, recruitment indices, and available environmental data indicate that good and poor year class success are directly and indirectly related to sea ice conditions during the preceding winter season, the timing of krill spawning, and the occurrence of dense salp concentrations. No correlation is shown with upper water column temperature or krill stock/spawning stock size. A concept is developed describing the interactions of various parameters leading to good or poor krill recruitment. (Auth.)

50-165

Seasonal changes in the phytoplankton and bacterioplankton distribution at the ice-water interface in the antarctic neritic area.

Delille, D., Fiala, M., Rosiers, C., *Marine ecology progress series,* July 20, 1995, 123(1-3), p.225-233, 75 refs.

Plankton, Sea ice, Bacteria, Biomass, Antarctica—Géologie Archipelago

To determine the relationship between phytoplankton and bacteria biomass near the ice-water interface in the Antarctic, the seasonal distributions of phytoplankton and bacteria populations were investigated on the continental shelf of Adélie Coast during the ice coverage period. An under-ice surface station was sampled weekly from Mar. 1991 to Jan. 1992 for the bottom ice and for surface, 0.5 and 2 m depth seawater. Seawater chlorophyll *a* values ranged from 0.9 mg/m^3 in summer to 0.01 mg/m^3 in winter. Values 50 times higher were recorded in the overlying ice. Bacterial abundance ranged from 0.5 x 10^{11} cells/m^3 in July to 6.0 x 10^{11} cells/m^3 after the ice break-up. Values reaching up to 2.5 x 10^{12} cells/m^3 were recorded in sea ice. Bacterial biomass and chlorophyll *a* concentrations were significantly correlated in both sea ice and underlying seawater. (Auth. mod.)

50-166

Glacial processes, sediments, landforms, and stratigraphy in the terminus region of Myrdalsjökull, Iceland.

Krüger, J., *Folia geographica danica,* 1994, Vol.21, 233p., With Danish summary. Refs. p.226-233.

Glaciation, Glacial geology, Glacial deposits, Glacier surveys, Geological surveys, Topographic surveys, Moraines, Glacial till, Outwash, Sediment transport, Stratigraphy, Geomorphology, Iceland

50-167

Snow monitoring in the United Kingdom using NOAA AVHRR imagery.

Lucas, R.M., Harrison, A.R., Chichester, England, John Wiley & Sons, Ltd., 1994, p.111-130, 20 refs.

DLC GE70.E583 1993

Snow surveys, Snow cover distribution, Snow line, Terrain identification, Mapping, Radiometry, Spaceborne photography, United Kingdom

50-168

Exploration and development of oil and gas field on the shelf of Sakhalin.

Bogdanchikov, S.M., Astaf'ev, V.N., Boiarshin, E.K., International Offshore and Polar Engineering Conference, 5th, Hague, Netherlands, June 11-16, 1995. Proceedings. Vol.1, Golden, CO, International Society of Offshore and Polar Engineers (ISOPE), 1995, p.7-13.

Exploration, Petroleum industry, Economic development, Natural resources, Crude oil, Natural gas, Russia—Sakhalin Island

50-169

Oil combatting in a cold environment using bioremediation techniques.

Rytkönen, J., Liukkonen, S., Worthington, T., Levchenko, A.B., Matishov, G.G., Petrov, V.S., International Offshore and Polar Engineering Conference, 5th, Hague, Netherlands, June 11-16, 1995. Proceedings. Vol.1, Golden, CO, International Society of Offshore and Polar Engineers (ISOPE), 1995, p.24-30, 13 refs.

Oil spills, Oil recovery, Water pollution, Microbiology, Decomposition

50-170

Transport of natural gas as frozen hydrate.

Gudmundsson, J.S., Hveding, F., Børrehaug, A., International Offshore and Polar Engineering Conference, 5th, Hague, Netherlands, June 11-16, 1995. Proceedings. Vol.1, Golden, CO, International Society of Offshore and Polar Engineers (ISOPE), 1995, p.282-288, 18 refs.

Natural gas, Liquefied gases, Hydrates, Artificial freezing, Refrigeration, Cold storage, Petroleum transportation, Tanker ships, Cost analysis

50-171

Kinetics of gas hydrate formation and kinetic inhibition in offshore oil and gas operations.

Englezos, P., International Offshore and Polar Engineering Conference, 5th, Hague, Netherlands, June 11-16, 1995. Proceedings. Vol.1, Golden, CO, International Society of Offshore and Polar Engineers (ISOPE), 1995, p.289-296, 61 refs.

Natural gas, Clathrates, Hydrates, Petroleum industry, Ice prevention, Antifreezes

50-172

Creep and yield model of frozen soil under triaxial compression.

Fish, A.M., MP 3674, International Offshore and Polar Engineering Conference, 5th, Hague, Netherlands, June 11-16, 1995. Proceedings. Vol.1, Golden, CO, International Society of Offshore and Polar Engineers (ISOPE), 1995, p.473-481, 50 refs.

Soil freezing, Soil creep, Frozen ground strength, Frozen ground compression, Mathematical models

A combined creep and yield model has been developed for the entire (primary, secondary and tertiary) creep and the long-term strength of frozen soil under multiaxial stress at both constant stresses and constant strain rates by a single (unified) constitutive equation. Secondary creep is assumed to be an inflection point of a creep curve defining time to failure. Secondary creep rate is described by a new flow law, the stress function of which includes the first invariant of the stress tensor. The model consists of four principal elements: a constitutive equation, a viscous flow equation and a yield criterion, all united by a time-to-failure function. The yield criterion is selected either in the form of a parabolic (extended) von Mises-Drucker-Prager model or a parabolic (extended) Mohr-Coulomb rupture model (Fish, 1991). The criteria take into account that, at a certain magnitude of the mean normal stress (σ_{max}), the shear strength of frozen soil reaches a maximum. The yield criteria are included in the time-to-failure function, the shape parameters of which are independent of the loading regime. The model has been verified using test data on creep and the long-term strength of frozen soil under triaxial compression at -10°C.

50-173

Axial loading of foundations embedded in frozen soils.

Selvadurai, A.P.S., Hu, J., International Offshore and Polar Engineering Conference, 5th, Hague, Netherlands, June 11-16, 1995. Proceedings. Vol.1, Golden, CO, International Society of Offshore and Polar Engineers (ISOPE), 1995, p.488-495, 26 refs.

Soil freezing, Soil creep, Frozen ground strength, Frozen ground compression, Foundations, Pile load tests, Mathematical models

50-174

Norwegian petroleum resources with focus on challenges and opportunities in the Barents Sea.

Aamodt, F.R., International Offshore and Polar Engineering Conference, 5th, Hague, Netherlands, June 11-16, 1995. Proceedings. Vol.1, Golden, CO, International Society of Offshore and Polar Engineers (ISOPE), 1995, p.560-566.

Exploration, Offshore drilling, Petroleum industry, Economic development, Natural resources, Crude oil, Natural gas, Norway, Barents Sea, Norwegian Sea

50-175

Proceedings. Vol.2.

International Offshore and Polar Engineering Conference, 5th, Hague, Netherlands, June 11-16, 1995, Chung, J.S., ed, Sayed, M., ed, Gresnigt, A.M., ed, Golden, CO, International Society of Offshore and Polar Engineers (ISOPE), 1995, 555p., Refs. passim. For selected papers see 50-176 through 50-216.

Offshore structures, Offshore drilling, Ice solid interface, Ice cover strength, Ice loads, Ice pressure, Ice friction, Ice deformation, Ice surveys, Sea ice distribution, Ice conditions, Ice forecasting, Petroleum industry

50-176

Engineering repercussions of ocean wave propagation in ice-infested seas.

Squire, V.A., International Offshore and Polar Engineering Conference, 5th, Hague, Netherlands, June 11-16, 1995. Proceedings. Vol.2. Edited by J.S. Chung, M. Sayed, and A.M. Gresnigt, Golden, CO, International Society of Offshore and Polar Engineers (ISOPE), 1995, p.1-7, 40 refs.

Ocean waves, Ice water interface, Ice edge, Ice cover effect, Ice cover strength, Ice elasticity, Wave propagation

50-177

Geotechnical design of the Baydaratskaya Bay pipeline crossing.

Oswell, J.M., Hanna, A.J., Leussink, J.W., Nixon, J.F., International Offshore and Polar Engineering Conference, 5th, Hague, Netherlands, June 11-16, 1995. Proceedings. Vol.2. Edited by J.S. Chung, M. Sayed, and A.M. Gresnigt, Golden, CO, International Society of Offshore and Polar Engineers (ISOPE), 1995, p.34-40, 6 refs.

Gas pipelines, Underground pipelines, Pipe laying, Permafrost beneath structures, Subsea permafrost, Ocean bottom, Frozen ground settling, Engineering geology, Russia—Baydaratskaya Bay

50-178

Instrumentation and monitoring of large-diameter natural gas pipelines operating at sub-zero temperatures in the United Kingdom.

Greene, D.P., Kettle, R.J., Middleton, E., International Offshore and Polar Engineering Conference, 5th, Hague, Netherlands, June 11-16, 1995. Proceedings. Vol.2. Edited by J.S. Chung, M. Sayed, and A.M. Gresnigt, Golden, CO, International Society of Offshore and Polar Engineers (ISOPE), 1995, p.41-46, 19 refs.

Gas pipelines, Underground pipelines, Soil freezing, Frost heave, Soil stabilization, United Kingdom

50-179

Creep of saline ice at low stresses and high temperatures.

Richter-Menge, J.A., Cox, G.F.N., MP 3675, International Offshore and Polar Engineering Conference, 5th, Hague, Netherlands, June 11-16, 1995. Proceedings. Vol.2. Edited by J.S. Chung, M. Sayed, and A.M. Gresnigt, Golden, CO, International Society of Offshore and Polar Engineers (ISOPE), 1995, p.312-316, 21 refs.

Sea ice, Salt ice, Ice cover strength, Ice creep, Ice deformation, Ice pressure, Ice loads, Ice temperature, Strain tests

In engineering design and material models the creep behavior of ice or ice-rich soils is typically represented by the single-term flow law, $\varepsilon = B\sigma^n$, where n=3. The applicability of this constitutive model has been demonstrated for stresses above 0.10 MPa by a number of investigators. This paper addresses whether it is appropriate to extend the use of this form of the flow law to cases where the applied stress is as low as 0.01 MPa. Data from creep tests done on saline ice samples at stresses ranging from 1.5 to 0.01 MPa and at a temperature of -2°C are presented. The analysis of the data suggests that, while the single-term flow law provides a good approximation, a two-term flow law more accurately represents the ice behavior under these conditions.

50-180

On the indentation of a blunt ice wedge.

Selvadurai, A.P.S., Sepehr, K., International Offshore and Polar Engineering Conference, 5th, Hague, Netherlands, June 11-16, 1995. Proceedings. Vol.2. Edited by J.S. Chung, M. Sayed, and A.M. Gresnigt, Golden, CO, International Society of Offshore and Polar Engineers (ISOPE), 1995, p.317-322, 12 refs.

Offshore structures, Ice solid interface, Ice loads, Ice pressure, Ice friction, Ice cover strength, Ice deformation

50-181

Shear strength of ice rubble in laboratory tests.

Lehmus, E., Kärnä, T., International Offshore and Polar Engineering Conference, 5th, Hague, Netherlands, June 11-16, 1995. Proceedings. Vol.2. Edited by J.S. Chung, M. Sayed, and A.M. Gresnigt, Golden, CO, International Society of Offshore and Polar Engineers (ISOPE), 1995, p.323-329, 14 refs.

Ice cover strength, Ice pileup, Ice pressure, Ice friction, Ice adhesion, Ice deformation, Environmental tests

50-182

Yield conditions of an assembly of discrete ice floes.

Sayed, M., Neralla, V.R., Savage, S.B., International Offshore and Polar Engineering Conference, 5th, Hague, Netherlands, June 11-16, 1995. Proceedings. Vol.2. Edited by J.S. Chung, M. Sayed, and A.M. Gresnigt, Golden, CO, International Society of Offshore and Polar Engineers (ISOPE), 1995, p.330-335, 14 refs.

Ice floes, Ice cover strength, Ice pressure, Ice friction, Ice deformation, Environmental tests

50-183

Finite element analysis of the creep of debris containing thin ice bodies.

Azizi, F., Whalley, W.B., International Offshore and Polar Engineering Conference, 5th, Hague, Netherlands, June 11-16, 1995. Proceedings. Vol.2. Edited by J.S. Chung, M. Sayed, and A.M. Gresnigt, Golden, CO, International Society of Offshore and Polar Engineers (ISOPE), 1995, p.336-341, 11 refs.

Talus, Ground ice, Ice lenses, Fossil ice, Permafrost indicators, Soil creep, Ice creep, Periglacial processes, Slope processes

50-184

Satellite remote sensing tools for sea ice engineering.

Cavanié, A., Ezraty, R., Gohin, F., International Offshore and Polar Engineering Conference, 5th, Hague, Netherlands, June 11-16, 1995. Proceedings. Vol.2. Edited by J.S. Chung, M. Sayed, and A.M. Gresnigt, Golden, CO, International Society of Offshore and Polar Engineers (ISOPE), 1995, p.342-344, 8 refs.

Ice surveys, Sea ice distribution, Ice conditions, Ice detection, Icebergs, Radiometry, Synthetic aperture radar, Spaceborne photography

50-185

Potential resistance of the Kara Sea ice cover.

Gavrilo, V.P., Kovalev, S.M., Lebedev, G.A., Nedoshivin, O.A., International Offshore and Polar Engineering Conference, 5th, Hague, Netherlands, June 11-16, 1995. Proceedings. Vol.2. Edited by J.S. Chung, M. Sayed, and A.M. Gresnigt, Golden, CO, International Society of Offshore and Polar Engineers (ISOPE), 1995, p.345-348, 7 refs.

Sea ice, Ice cover strength, Metal ice friction, Ice forecasting, Ice navigation, Ice routing, Northern Sea Route, Russia—Kara Sea

50-186

Short term variations of sea ice cover.

Chouinard, L.E., Garrigues, L., Neralla, V.R., International Offshore and Polar Engineering Conference, 5th, Hague, Netherlands, June 11-16, 1995. Proceedings. Vol.2. Edited by J.S. Chung, M. Sayed, and A.M. Gresnigt, Golden, CO, International Society of Offshore and Polar Engineers (ISOPE), 1995, p.349-356, 9 refs.

Ice surveys, Sea ice distribution, Ice conditions, Ice cover thickness, Ice forecasting, Statistical analysis, Canada—Saint Lawrence, Gulf

50-187

Interannual variability of the ice cover in the Chukchi and Beaufort Seas.

Chouinard, L.E., Garrigues, L., Neralla, V.R., International Offshore and Polar Engineering Conference, 5th, Hague, Netherlands, June 11-16, 1995. Proceedings. Vol.2. Edited by J.S. Chung, M. Sayed, and A.M. Gresnigt, Golden, CO, International Society of Offshore and Polar Engineers (ISOPE), 1995, p.357-363, 12 refs.

Ice surveys, Sea ice distribution, Ice conditions, Ice forecasting, Statistical analysis, Chukchi Sea, Beaufort Sea

50-188

Seismic activity of landfast ice.

Nikitin, V.A., Smirnov, V.N., Shushlebin, A.I., Sheikin, I.B., International Offshore and Polar Engineering Conference, 5th, Hague, Netherlands, June 11-16, 1995. Proceedings. Vol.2. Edited by J.S. Chung, M. Sayed, and A.M. Gresnigt, Golden, CO, International Society of Offshore and Polar Engineers (ISOPE), 1995, p.364-368, 1 ref.

Fast ice, Icequakes, Ice friction, Ice deformation, Ice cracks, Ice breakup, Ice water interface, Tides, Russia—Sakhalin Island

50-189

Seasonal variability of sea ice sizes and thickness on the northern Sakhalin shelf.

Polomoshnov, A.M., Truskov, P.A., Pokrashenko, S.A., International Offshore and Polar Engineering Conference, 5th, Hague, Netherlands, June 11-16, 1995. Proceedings. Vol.2. Edited by J.S. Chung, M. Sayed, and A.M. Gresnigt, Golden, CO, International Society of Offshore and Polar Engineers (ISOPE), 1995, p.369-373, 1 ref.

Ice surveys, Sea ice distribution, Ice cover thickness, Ice conditions, Ice floes, Drift, Statistical analysis, Russia—Sakhalin Island

50-190

Simulation of the ice-structure interaction under the parabolic strength criterion for ice.

Matskevich, D.G., International Offshore and Polar Engineering Conference, 5th, Hague, Netherlands, June 11-16, 1995. Proceedings. Vol.2. Edited by J.S. Chung, M. Sayed, and A.M. Gresnigt, Golden, CO, International Society of Offshore and Polar Engineers (ISOPE), 1995, p.374-380, 18 refs.

Offshore structures, Ice solid interface, Ice cover strength, Ice loads, Ice friction, Ice pressure, Ice deformation, Ice plasticity, Computerized simulation

50-191

Abrasion mode of a circular cylindrical concrete structure due to sea ice movement.

Itoh, Y., Tanaka, Y., Delgado, A., Saeki, H., International Offshore and Polar Engineering Conference, 5th, Hague, Netherlands, June 11-16, 1995. Proceedings. Vol.2. Edited by J.S. Chung, M. Sayed, and A.M. Gresnigt, Golden, CO, International Society of Offshore and Polar Engineers (ISOPE), 1995, p.381-388, 13 refs.

Offshore structures, Concrete structures, Ice solid interface, Ice friction, Ice pressure, Ice loads, Ice cover strength, Ice deformation, Ice breaking, Abrasion

50-192

Dynamic responses of highway bridge under shock forces of icefloe.

Cai, Z.R., Li, J.J., Sun, X.M., Men, X.Y., Jin, D.Y., International Offshore and Polar Engineering Conference, 5th, Hague, Netherlands, June 11-16, 1995. Proceedings. Vol.2. Edited by J.S. Chung, M. Sayed, and A.M. Gresnigt, Golden, CO, International Society of Offshore and Polar Engineers (ISOPE), 1995, p.389-392, 9 refs.

Bridges, Piers, Floods, River ice, Ice solid interface, Ice loads, Ice pressure, Ice friction, China—Heilongjiang Province

50-193

Structure of internal stresses in the uncompacted ice cover.

Sukhorukov, K.K., International Offshore and Polar Engineering Conference, 5th, Hague, Netherlands, June 11-16, 1995. Proceedings. Vol.2. Edited by J.S. Chung, M. Sayed, and A.M. Gresnigt, Golden, CO, International Society of Offshore and Polar Engineers (ISOPE), 1995, p.393-397, 9 refs.

Drift stations, Drift, Ice floes, Icebergs, Ice loads, Ice pressure, Ice cover strength, Ice deformation, Stress concentration, Antarctica—Weddell Sea

Local internal stresses in ice floes after collisions with icebergs were measured by the joint Russian-U.S. Weddell-I ice drift station, Feb.-June 1992. It was found that the stresses extended 300, 350, and 400 ice thicknesses of the floe for ice concentrations of 0.9, 0.95, and 1.0, respectively.

50-194

Mechanisms of ice gouging.

Kioka, S., Saeki, H., International Offshore and Polar Engineering Conference, 5th, Hague, Netherlands, June 11-16, 1995. Proceedings. Vol.2. Edited by J.S. Chung, M. Sayed, and A.M. Gresnigt, Golden, CO, International Society of Offshore and Polar Engineers (ISOPE), 1995, p.398-402, 2 refs.

Ice scoring, Ice erosion, Ice loads, Ice pressure, Ice friction, Ice bottom surface, Ocean bottom, Environmental tests, Mathematical models

50-195

Ice-structure dynamic interaction: failure ice model.

Bekker, A.T., International Offshore and Polar Engineering Conference, 5th, Hague, Netherlands, June 11-16, 1995. Proceedings. Vol.2. Edited by J.S. Chung, M. Sayed, and A.M. Gresnigt, Golden, CO, International Society of Offshore and Polar Engineers (ISOPE), 1995, p.403-407, 7 refs.

Offshore structures, Ice solid interface, Ice loads, Ice pressure, Ice friction, Ice cover strength, Ice deformation, Ice breaking, Mathematical models

50-196

Joint probability of environmental loads on marine structures.

Liu, D.F., Yang, Y.C., Wang, C., Shi, J.G., International Offshore and Polar Engineering Conference, 5th, Hague, Netherlands, June 11-16, 1995. Proceedings. Vol.2. Edited by J.S. Chung, M. Sayed, and A.M. Gresnigt, Golden, CO, International Society of Offshore and Polar Engineers (ISOPE), 1995, p.408-411, 10 refs.

Offshore structures, Design criteria, Ice loads, Ice cover thickness, Ice forecasting, Degree days, Freezing indexes, Ocean waves, Wind pressure, Statistical analysis

50-197

Recent advances in ice interaction and force estimation processes for vertical structures.

Arunachalam, A.V.M., International Offshore and Polar Engineering Conference, 5th, Hague, Netherlands, June 11-16, 1995. Proceedings. Vol.2. Edited by J.S. Chung, M. Sayed, and A.M. Gresnigt, Golden, CO, International Society of Offshore and Polar Engineers (ISOPE), 1995, p.412-419, 33 refs.

Offshore structures, Bridges, Piers, Ice solid interface, Ice loads, Ice pressure, Ice cover strength, Stress concentration

50-198

Ice conditions along the North-East Passage in view of ship trafficability studies.

Riska, K., International Offshore and Polar Engineering Conference, 5th, Hague, Netherlands, June 11-16, 1995. Proceedings. Vol.2. Edited by J.S. Chung, M. Sayed, and A.M. Gresnigt, Golden, CO, International Society of Offshore and Polar Engineers (ISOPE), 1995, p.420-427, 33 refs.

Ice surveys, Sea ice distribution, Ice conditions, Pressure ridges, Ice reporting, Ice forecasting, Ice navigation, Ice routing, Northern Sea Route

50-199

Statistics of ice-structure interaction.

Kajaste-Rudnitski, J., International Offshore and Polar Engineering Conference, 5th, Hague, Netherlands, June 11-16, 1995. Proceedings. Vol.2. Edited by J.S. Chung, M. Sayed, and A.M. Gresnigt, Golden, CO, International Society of Offshore and Polar Engineers (ISOPE), 1995, p.428-433, 11 refs.

Offshore structures, Ice solid interface, Ice cover strength, Ice loads, Ice pressure, Ice friction, Ice deformation, Ice breaking, Statistical analysis

50-200

Influence of cavitation on the performance of Canadian R-Class icebreaker propellers in blocked flows.

Walker, D., Bose, N., Yamaguchi, H., Jones, S.J., International Offshore and Polar Engineering Conference, 5th, Hague, Netherlands, June 11-16, 1995. Proceedings. Vol.2. Edited by J.S. Chung, M. Sayed, and A.M. Gresnigt, Golden, CO, International Society of Offshore and Polar Engineers (ISOPE), 1995, p.434-439, 12 refs.

Icebreakers, Propellers, Ice solid interface, Ice loads, Metal ice friction, Ice navigation, Cavitation, Hydrodynamics

50-201

Investigation of ice-resistant coatings used to protect ice-breaker hull.

Babtsev, V.A., Shemendiuk, G.P., International Offshore and Polar Engineering Conference, 5th, Hague, Netherlands, June 11-16, 1995. Proceedings. Vol.2. Edited by J.S. Chung, M. Sayed, and A.M. Gresnigt, Golden, CO, International Society of Offshore and Polar Engineers (ISOPE), 1995, p.440-443.

Icebreakers, Ice solid interface, Ice loads, Metal ice friction, Ice navigation, Ice prevention, Protective coatings

50-202

Influence of saline frozen ground on VLF and LF radio wave propagation parameters in the arctic shore regions.

Frolov, A.D., Fediukin, I.V., International Offshore and Polar Engineering Conference, 5th, Hague, Netherlands, June 11-16, 1995. Proceedings. Vol.2. Edited by J.S. Chung, M. Sayed, and A.M. Gresnigt, Golden, CO, International Society of Offshore and Polar Engineers (ISOPE), 1995, p.444-450, 14 refs.

Saline soils, Frozen ground chemistry, Frozen ground physics, Permafrost physics, Electrical properties, Radio waves, Wave propagation

50-203

New ideas on aircraft icing forecast: first example and experiences.

Fuchs, W., Schickel, K.P., International Offshore and Polar Engineering Conference, 5th, Hague, Netherlands, June 11-16, 1995. Proceedings. Vol.2. Edited by J.S. Chung, M. Sayed, and A.M. Gresnigt, Golden, CO, International Society of Offshore and Polar Engineers (ISOPE), 1995, p.451-455, 10 refs.

Aircraft icing, Ice forecasting, Cloud physics, Weather forecasting, Germany

50-204

Video monitoring of atmospheric icing.

Wareing, J.B., Chetwood, P.A., International Offshore and Polar Engineering Conference, 5th, Hague, Netherlands, June 11-16, 1995. Proceedings. Vol.2. Edited by J.S. Chung, M. Sayed, and A.M. Gresnigt, Golden, CO, International Society of Offshore and Polar Engineers (ISOPE), 1995, p.456-460, 4 refs.

Power line icing, Ice detection, Snowstorms, Ice storms, Weather forecasting, Photographic reconnaissance, Infrared reconnaissance, Monitors, Data transmission, United Kingdom

50-205

Cable twisting due to atmospheric icing.

McComber, P., Druez, J., Savadjiev, K., International Offshore and Polar Engineering Conference, 5th, Hague, Netherlands, June 11-16, 1995. Proceedings. Vol.2. Edited by J.S. Chung, M. Sayed, and A.M. Gresnigt, Golden, CO, International Society of Offshore and Polar Engineers (ISOPE), 1995, p.461-468, 17 refs.

Power line icing, Ice accretion, Ice loads, Wind pressure, Mathematical models

50-206

Experimental verification of a pendant ice formation model.

Szilder, K., Forest, T., Lozowski, E.P., International Offshore and Polar Engineering Conference, 5th, Hague, Netherlands, June 11-16, 1995. Proceedings. Vol.2. Edited by J.S. Chung, M. Sayed, and A.M. Gresnigt, Golden, CO, International Society of Offshore and Polar Engineers (ISOPE), 1995, p.469-475, 10 refs.

Icicles, Ice formation, Ice accretion, Ice growth, Mathematical models

50-207

Study of surface conductivity and flashover voltages of ice samples formed under various freezing conditions.

Farzaneh, M., Chen, X., Zhang, J., International Offshore and Polar Engineering Conference, 5th, Hague, Netherlands, June 11-16, 1995. Proceedings. Vol.2. Edited by J.S. Chung, M. Sayed, and A.M. Gresnigt, Golden, CO, International Society of Offshore and Polar Engineers (ISOPE), 1995, p.476-481, 21 refs.

Power line icing, Ice electrical properties, Electrical insulation, Electric equipment, Electrical resistivity, Electric corona

50-208

Structure of ice grown on high voltage conductors.

Farzaneh, M., Bouillot, J., Teisseyre, Y., Svensson, E.C., Donaberger, R.L., International Offshore and Polar Engineering Conference, 5th, Hague, Netherlands, June 11-16, 1995. Proceedings. Vol.2. Edited by J.S. Chung, M. Sayed, and A.M. Gresnigt, Golden, CO, International Society of Offshore and Polar Engineers (ISOPE), 1995, p.482-484, 10 refs.

Power line icing, Ice electrical properties, Ice accretion, Ice crystal growth, Ice crystal structure

50-209

Challenges for the development of hydrocarbon fields in the Barents Sea.

Gudmestad, O.T., Olufsen, A., Strass, P., International Offshore and Polar Engineering Conference, 5th, Hague, Netherlands, June 11-16, 1995. Proceedings. Vol.2. Edited by J.S. Chung, M. Sayed, and A.M. Gresnigt, Golden, CO, International Society of Offshore and Polar Engineers (ISOPE), 1995, p.485-492, 10 refs.

Petroleum industry, Economic development, Exploration, Natural gas, Crude oil, Ice conditions, Offshore drilling, Offshore structures, Barents Sea

50-210

Petroleum exploration opportunities on the U.S.-Russia Chukchi Sea continental shelf.

Warren, T., et al, International Offshore and Polar Engineering Conference, 5th, Hague, Netherlands, June 11-16, 1995. Proceedings. Vol.2. Edited by J.S. Chung, M. Sayed, and A.M. Gresnigt, Golden, CO, International Society of Offshore and Polar Engineers (ISOPE), 1995, p.493-500, 39 refs.

Petroleum industry, Economic development, Geological surveys, Exploration, Natural gas, Crude oil, Offshore drilling, Environmental impact, Environmental protection, International cooperation, Chukchi Sea

50-211

Northern Gateway Oil Terminal Study: phase I.

Vikhamar, T.K., Gubaĭdulin, M., International Offshore and Polar Engineering Conference, 5th, Hague, Netherlands, June 11-16, 1995. Proceedings. Vol.2. Edited by J.S. Chung, M. Sayed, and A.M. Gresnigt, Golden, CO, International Society of Offshore and Polar Engineers (ISOPE), 1995, p.501-506.

Petroleum industry, Economic development, Pipelines, Oil storage, Tanker ships, Petroleum transportation, International cooperation, Russia—Pechora Sea

50-212

New challenges for the pipeline engineer in the Russian Arctic.

Brown, R.J., International Offshore and Polar Engineering Conference, 5th, Hague, Netherlands, June 11-16, 1995. Proceedings. Vol.2. Edited by J.S. Chung, M. Sayed, and A.M. Gresnigt, Golden, CO, International Society of Offshore and Polar Engineers (ISOPE), 1995, p.507-513, 6 refs.

Petroleum industry, Economic development, Pipelines, Pipe laying, Trenching, Ice roads, Ice cutting, Ice (construction material), Russia

50-213

Observations of sea ice and icebergs in the western Barents Sea during the winter of 1987.

Løset, S., Carstens, T., International Offshore and Polar Engineering Conference, 5th, Hague, Netherlands, June 11-16, 1995. Proceedings. Vol.2. Edited by J.S. Chung, M. Sayed, and A.M. Gresnigt, Golden, CO, International Society of Offshore and Polar Engineers (ISOPE), 1995, p.514-520, 10 refs.

Ice surveys, Sea ice distribution, Ice edge, Icebergs, Drift, Barents Sea

50-214

Method of estimating sea ice flexural strength based on hydrometeorological data.

Gavrilo, V.P., Kovalev, S.M., Lebedev, G.A., Nedoshivin, O.A., International Offshore and Polar Engineering Conference, 5th, Hague, Netherlands, June 11-16, 1995. Proceedings. Vol.2. Edited by J.S. Chung, M. Sayed, and A.M. Gresnigt, Golden, CO, International Society of Offshore and Polar Engineers (ISOPE), 1995, p.521-528, 20 refs.

Ice surveys, Ice cover strength, Ice cover thickness, Ice pressure, Ice salinity, Flexural strength, Mathematical models, Barents Sea, Russia—Kara Sea

50-215

Ocean Drilling Program in Fram Strait: a case study of the use of ice charts to predict the probability of ice-free conditions.

Wadhams, P., Casarini, M.P., International Offshore and Polar Engineering Conference, 5th, Hague, Netherlands, June 11-16, 1995. Proceedings. Vol.2. Edited by J.S. Chung, M. Sayed, and A.M. Gresnigt, Golden, CO, International Society of Offshore and Polar Engineers (ISOPE), 1995, p.529-536, 9 refs.

Ice surveys, Sea ice distribution, Ice edge, Ice conditions, Polynyas, Ice forecasting, Oceanographic surveys, Offshore drilling, Fram Strait

50-216

Operating requirements for and historical operations of arctic offshore drilling systems in the United States.

Regg, J., Breitmeier, J., Walker, J., International Offshore and Polar Engineering Conference, 5th, Hague, Netherlands, June 11-16, 1995. Proceedings. Vol.2. Edited by J.S. Chung, M. Sayed, and A.M. Gresnigt, Golden, CO, International Society of Offshore and Polar Engineers (ISOPE), 1995, p.537-539, 4 refs.

Petroleum industry, Exploration, Offshore drilling, Safety, Environmental protection, Legislation, United States—Alaska

50-217

Durability issues of FRP composites in offshore structures.

Dutta, P.K., MP 3676, International Offshore and Polar Engineering Conference, 5th, Hague, Netherlands, June 11-16, 1995. Proceedings. Vol.4, Golden, CO, International Society of Offshore and Polar Engineers (ISOPE), 1995, p.271-276, 14 refs.

Offshore structures, Composite materials, Construction materials, Plastics, Freeze thaw tests, Frost resistance, Thermal stresses

Fiber reinforced plastic (FRP) composites are attractive materials for construction of offshore structures. However, there are concerns about the durability of these materials in extreme environments. Temperature and moisture play a crucial role on the life cycle of these composites. Influence of alkaline and saline environment is also important. Ultraviolet rays, repetitive freezing and thawing, load cycling, and creep under sustained load are other important issues, as are fire hazards and flammability of the materials. This paper briefly summarizes the impact of all these factors on the durability of the FRP materials.

50-218

Fatigue reliability calculation for structure members of offshore fixed platform.

Fang, H.C., Xu, F.Y., International Offshore and Polar Engineering Conference, 5th, Hague, Netherlands, June 11-16, 1995. Proceedings. Vol.4, Golden, CO, International Society of Offshore and Polar Engineers (ISOPE), 1995, p.394-398, 4 refs.

Offshore structures, Ice solid interface, Ice loads, Ice pressure, Ocean waves, Fatigue (materials), Statistical analysis

50-219

Remote sensing for global change, climate change and atmosphere & ocean forecasting.

European "International Space Year" Conference, Munich, Germany, 30 March-4 April 1992, Space in the service of the changing earth; Environment observation and climate modelling through international space projects. Vol.1, Paris, European Space Agency, 1992, 398p., Refs. passim. For selected papers see 50-220 through 50-229.

DLC QB495.E92 1992

Cloud cover, Remote sensing, Cloud physics, Sea ice, Spacecraft, Ice conditions, Polar atmospheres

50-220

Estimating the vertical dimension of convective cloudiness over the polar ocean from AVHRR data.

Manschke, A., European "International Space Year" Conference, Munich, Germany, 30 March-4 April 1992. Vol.1. Remote sensing for global change, climate change and atmosphere & ocean forecasting, Paris, European Space Agency, 1992, p.115-116, 3 refs.

Remote sensing, Cloud cover, Radiance, Polar atmospheres, Cloud physics, Radiometry

50-221

Detection of polar stratospheric clouds from satellite.

Meerkoetter, R., Buell, R., Wendling, P., European "International Space Year" Conference, Munich, Germany, 30 March-4 April 1992. Vol.1. Remote sensing for global change, climate change and atmosphere & ocean forecasting, Paris, European Space Agency, 1992, p.117-121, 11 refs.

Polar stratospheric clouds, Remote sensing, Spacecraft, Temperature measurement, Temperature distribution

50-222

Use of ERS-1 SAR data in numerical sea ice modeling.

Leppäranta, M., Zhang, Z.H., European "International Space Year" Conference, Munich, Germany, 30 March-4 April 1992. Vol.1. Remote sensing for global change, climate change and atmosphere & ocean forecasting, Paris, European Space Agency, 1992, p.123-128, 9 refs.

Synthetic aperture radar, Sea ice, Ice models, Ice cover thickness, Ice conditions, Velocity, Mathematical models, Remote sensing, Bothnia, Bay

50-223

Remote sensing of arctic sea ice using the ERS-1 SAR.

Askne, J., Ulander, L., European "International Space Year" Conference, Munich, Germany, 30 March-4 April 1992. Vol.1. Remote sensing for global change, climate change and atmosphere & ocean forecasting, Paris, European Space Agency, 1992, p.129-133, 11 refs.

Remote sensing, Synthetic aperture radar, Sea ice, Ice conditions, Spacecraft, Sea ice distribution, Freezeup

50-224

Detecting new-ice in the arctic from multispectral satellite data.

Martin, T., Taurat, D., European "International Space Year" Conference, Munich, Germany, 30 March-4 April 1992. Vol.1. Remote sensing for global change, climate change and atmosphere & ocean forecasting, Paris, European Space Agency, 1992, p.135-140, 8 refs.

Sea ice distribution, Ice conditions, Spacecraft, Remote sensing, Radiometry, Brightness, Classifications, Spaceborne photography, Greenland Sea

50-225

Improved use of passive microwave data for sea ice detection.

Heygster, G.C., Burns, B.A., Markus, T., Meyer-Lerbs, L., Sethmann, R., Tietze, R.P., European "International Space Year" Conference, Munich, Germany, 30 March-4 April 1992. Vol.1. Remote sensing for global change, climate change and atmosphere & ocean forecasting, Paris, European Space Agency, 1992, p.145-150, 18 refs.

Sea ice, Remote sensing, Ice detection, Microwaves, Radiometry, Polynyas, Sea ice distribution, Analysis (mathematics), Ice shelves, Spacecraft, Brightness, Antarctica—Halley Station, Antarctica—Weddell Sea

Signal and image processing applications improve sea ice detection with passive microwave imagery. Three deconvolution techniques, a Wiener filter and two entropy-based algorithms have been used to improve the horizontal resolution. A blind deconvolution algorithm determining two images given only their noisy convolution checks the antenna pattern for possible changes after launch. Sea ice concentrations derived from passive microwave imagery using different algorithms and from AVHRR images are projected onto a common grid and compared. Methods are described to merge AVHRR and SSM/I data sets to validate and improve ice concentration estimates for the Weddell Sea. The results of a method for detecting subpixel-scale polynyas, based on models for the brightness temperature transition from sea ice to antarctic shelf ice with and without polynya, are compared to AVHRR data and wind data. (Auth. mod.)

50-226

2xCO_2 experiment with prescribed changes in sea surface temperature.

Mahfouf, J.-F., Royer, J.-F., Cariolle, D., European "International Space Year" Conference, Munich, Germany, 30 March-4 April 1992. Vol.1. Remote sensing for global change, climate change and atmosphere & ocean forecasting, Paris, European Space Agency, 1992, p.151-155, 8 refs.

Global warming, Carbon dioxide, Stratosphere, Atmospheric circulation, Climate, Ozone, Air water interactions, Models, Polar atmospheres, Barents Sea

50-227

Microwave radiometry for monitoring the diverse cloudiness regimes on Earth: a review.

Katsaros, K.B., European "International Space Year" Conference, Munich, Germany, 30 March-4 April 1992. Vol.1. Remote sensing for global change, climate change and atmosphere & ocean forecasting, Paris, European Space Agency, 1992, p.163-168, 18 refs.

Microwaves, Radiometry, Cloud cover, Remote sensing, Analysis (mathematics), Infrared radiation, Atmospheric disturbances, Polar atmospheres, Ice crystals, Cloud physics, Water vapor

50-228

Use of AVHRR-derived cloudiness and precipitation in operational weather forecasting and in model studies.

Karlsson, K.-G., European "International Space Year" Conference, Munich, Germany, 30 March-4 April 1992. Vol.1. Remote sensing for global change, climate change and atmosphere & ocean forecasting, Paris, European Space Agency, 1992, p.211-216, 8 refs.

Cloud cover, Weather forecasting, Precipitation (meteorology), Radiometry, Cold weather operation, Spacecraft, Accuracy, Models, Classifications

50-229

Retrieval of cloud liquid water and precipitation from polarized microwave simulations and SSM/I measurements.

Bauer, P., Schlüssel, P., European "International Space Year" Conference, Munich, Germany, 30 March-4 April 1992. Vol.1. Remote sensing for global change, climate change and atmosphere & ocean forecasting, Paris, European Space Agency, 1992, p.235-240, 12 refs.

Cloud physics, Remote sensing, Models, Scattering, Radiometry, Water vapor, Rain, Spacecraft, Precipitation (meteorology), Accuracy, Microwaves, Ice water interface

50-230

Explore Antarctica.

Crossley, L., Cambridge, Cambridge University Press, 1995, 89p.

Expeditions, History, Education, Environmental protection, Legislation, Global warming, Ecosystems, Antarctica

50-231

Interhemispheric correlation of Late Pleistocene glacial events.

Lowell, T.V., et al, *Science*, Sep. 15, 1995, 269(5230), p.1541-1549, 49 refs.

Glacial geology, Icebergs, Geochronology, Ice sheets, Chile

A radiocarbon chronology shows that piedmont glacier lobes in the Chilean Andes achieved maxima during the last glaciation at 13,999 to 14,890, 21,000, 23,060, 26,940, 29,600, and ≥33,500 carbon-14 years before present (^{14}C yr B.P.) in a cold and wet Subantarctic Parkland environment. The last glaciation ended with massive collapse of ice lobes close to 14,000 ^{14}C yr B.P., accompanied by an influx of North Patagonian Rain Forest species. In the Southern Alps of New Zealand, additional glacial maxima are registered at 17,720 ^{14}C yr B.P., and at the beginning of the Younger Dryas at 11,050 ^{14}C yr B.P. These glacial maxima in mid-latitude mountains rimming the South Pacific were coeval with ice-rafting pulses in the North Atlantic Ocean. Furthermore, the last termination began suddenly and simultaneously in both polar hemispheres before the resumption of the modern mode of deep-water production in the Nordic Seas. Such interhemispheric coupling implies a global atmospheric signal rather than regional climatic changes caused by North Atlantic thermohaline switches or Laurentide ice surges. (Auth.)

50-232

Significant Paleozoic petroleum source rocks in the Canadian Williston Basin: their distribution, richness and thermal maturity (southeastern Saskatchewan and southwestern Manitoba).

Osadetz, K.G., Snowdon, L.R., *Canada. Geological Survey. Bulletin*, 1995, No.487, 60p., With French summary. Refs. p.44-49.

DLC QE1.G49125 1995

Exploration, Geological surveys, Crude oil, Natural resources, Stratigraphy, Geochemistry, Geologic structures, Lithology, Canada—Saskatchewan, Canada—Manitoba

50-233

Joint probability analysis for design storm evaluation.

Kaur, S., Upadhyay, D.S., Unusual storm events and their relevance to dam safety and snow hydrology, New Delhi, Central Board of Irrigation and Power, 1993, p.33-37, 2 refs.

DLC QC943.5.I4U58 1993

Snow hydrology, Snowmelt, Runoff forecasting, Flood forecasting, Statistical analysis, India

50-234

Review of design storm and flood studies for Salal Dam in Chenab basin.

Rao, P.R., Madan, D.S., Unusual storm events and their relevance to dam safety and snow hydrology, New Delhi, Central Board of Irrigation and Power, 1993, p.135-154, 3 refs.

DLC QC943.5.I4U58 1993

Snow hydrology, Snowmelt, Snow line, Runoff forecasting, Flood forecasting, India

50-235

Ice problems in planning and operation of hydro power plants.

Sharma, H.R., Unusual storm events and their relevance to dam safety and snow hydrology, New Delhi, Central Board of Irrigation and Power, 1993, p.163-169, 8 refs.

DLC QC943.5.I4U58 1993

River ice, Frazil ice, Ice loads, Ice control, Water intakes, India

50-236

Guidelines for avalanche barriers in the starting zone. [Richtlinien für den Lawinenverbau im Anbruchgebiet]

BUWAL, Bundesamt für Umwelt, Wald und Landschaft, (Federal Office for Environment, Forest and Landscape). WSL, Eidgenössische Forschungsanstalt für Wald, Schnee und Landschaft (Federal Research Laboratory for Forest, Snow and Landscape), Bern, Switzerland, 1990, 76p., In German.

Avalanche formation, Avalanche engineering, Snow fences, Snow stabilization, Snow retention, Switzerland

50-237

Physically based model of the form drag associated with sastrugi.

Andreas, E.L., CR 95-16, *U.S. Army Cold Regions Research and Engineering Laboratory. Report*, July 1995, 12p., ADA-298 688, 31 refs.

Sastrugi, Air ice water interaction, Snowdrifts, Drift, Snow cover effect, Mathematical models, Antarctica—Weddell Sea

On Ice Station Weddell, some characteristics of the neutral-stability air-ice drag coefficient at a reference height of 10 m (C_{DN10}) were observed that had not been documented before. The main finding was that wind-driven snow continually alters the sea ice surface; the resulting snowdrifts determine how large C_{DN10} is. In particular, this report describes three observations and attempts to explain them: 1) C_{DN10} is near 1.5×10^{-3} when the wind is well aligned with the drifted snow; 2) C_{DN10} is near 2.5×10^{-3} when the wind makes a large angle with the dominant orientation of the snowdrifts; 3) C_{DN10} can increase by 20% if, after being well aligned with the drift patterns, the mean wind direction shifts by as little as 20°. To investigate this behavior of C_{DN10}, this report adapts a model developed by Raupach that partitions the total surface stress into contributions from form drag and skin friction. With reasonable choices for free model parameters and with little fine-tuning, this physically based model can reproduce the three main observations. In other words, the model seems to include the basic physics of air-ice momentum exchange. This modeling implies that 10-cm high sastrugi-like roughness elements, rather than pressure ridges, sustain most of the form drag over compact sea ice in the western Weddell Sea. Lastly, the report speculates on what the observations and this model say about how to parameterize C_{DN10} over snow-covered sea ice. (Auth.)

50-238

Regional geocryological studies; collected scientific papers. [Regional'nye geokriologicheskie issledovaniia; sbornik nauchnykh trudov]

Sukhodol'skiĭ, S.E., ed, Koreĭsha, M.M., ed, Moscow, Stroĭizdat, 1985, 100p., In Russian. Refs. passim. For individual papers see 50-239 through 50-250.

Geocryology, Landscape types, Ground ice, Engineering geology

50-239

Classification of cryogenic polygonal relief. [Klassifikatsiia kriogennogo poligonal'nogo rel'efa]

Vtiurina, E.A., Vtiurin, B.I., Regional'nye geokriologicheskie issledovaniia; sbornik nauchnykh trudov (Regional geocryological studies; collected scientific papers). Edited by S.E. Sukhol'skiĭ and M.M. Koreĭsha, Moscow, Stroĭizdat, 1985, p.3-11, In Russian. 9 refs.

Polygonal topography, Geocryology, Classifications, Landscape types

50-240

Special geocryological regionalization of the European northeast. [Spetsial'noe geokriologicheskoe raĭonirovanie Evropeĭskogo Severo-Vostoka]

Ivanova, T.F., Kondrat'eva, K.A., Sukhodol'skiĭ, S.E., Regional'nye geokriologicheskie issledovaniia; sbornik nauchnykh trudov (Regional geocryological studies; collected scientific papers). Edited by S.E. Sukhol'skiĭ and M.M. Koreĭsha, Moscow, Stroĭizdat, 1985, p.11-20, In Russian. 1 ref.

Geocryology, Landscape types, Mapping, Taliks

50-241

Engineering-geocryological regionalization of the central regions of northwestern Siberia. [Inzhenerno-geokriologicheskoe raĭonirovanie tsentral'nykh raĭonov severa Zapadnoĭ Sibiri]

Belopukhova, E.B., Lakhtina, O.V., Regional'nye geokriologicheskie issledovaniia; sbornik nauchnykh trudov (Regional geocryological studies; collected scientific papers). Edited by S.E. Sukhol'skiĭ and M.M. Koreĭsha, Moscow, Stroĭizdat, 1985, p.21-27, In Russian. 4 refs.

Geocryology, Engineering geology, Landscape types, Tectonics, Terraces, Russia—Siberia, Russia—Nadym River, Russia—Poluy River

50-242

New results from studies of layered ground ice in Yamal. [Novye rezul'taty issledovaniĭ plastovykh l'dov na IAmale]

Dubikov, G.I., Koreĭsha, M.M., Parmuzin, S.IU., Sukhodol'skiĭ, S.E., Khimenkov, A.N., Regional'nye geokriologicheskie issledovaniia: sbornik nauchnykh trudov (Regional geocryological studies; collected scientific papers). Edited by S.E. Sukhol'skiĭ and M.M. Koreĭsha, Moscow, Stroĭizdat, 1985, p.27-37, In Russian. 2 refs.

Ground ice, Terraces, Ice formation, Ice composition, Ice structure, Russia—Yamal Peninsula

50-243

Experimental work on detecting deposits of layered ground ice using a high-precision ground-based magnetic survey. [Opytno-metodicheskie raboty po vydeleniiu zalezheĭ plastovykh l'dov metodom vysokotochnoĭ nazemnoĭ magnitnoĭ s"emki]

Matushkin, B.A., Regional'nye geokriologicheskie issledovaniia; sbornik nauchnykh trudov (Regional geocryological studies: collected scientific papers). Edited by S.E. Sukhol'skiĭ and M.M. Koreĭsha, Moscow, Stroĭizdat, 1985, p.37-39, In Russian. 2 refs.

Ground ice, Magnetic surveys, Magnetic anomalies, Ice physics, Russia—Yamal Peninsula

50-244

Engineering geological characteristics of solifluctive soil (Yamal Peninsula). [Inzhenerno-geologicheskaia kharakteristika solifliuktsionnykh gruntov (P-ov IAmal)]

Platov, N.A., Trofimov, B.T., Korobanova, I.G., Regional'nye geokriologicheskie issledovaniia; sbornik nauchnykh trudov (Regional geocryological studies; collected scientific papers). Edited by S.E. Sukhol'skiĭ and M.M. Koreĭsha, Moscow, Stroĭizdat, 1985, p.40-48, In Russian. 6 refs.

Solifluction, Engineering geology, Geocryology, Soil chemistry, Soil mechanics, Active layer, Cryogenic soils, Russia—Yamal Peninsula

50-245

Effect of processes of diagenesis on the formation of the cryogenic structure of marine and lacustrine deposits. [O vliianii nekotorykh protsessov diageneza na formirovanie kriogennogo stroeniia morskikh i ozernykh otlozheniĭ]

Khimenkov, A.N., Filin, V.A., Koreĭsha, M.M., Regional'nye geokriologicheskie issledovaniia; sbornik nauchnykh trudov (Regional geocryological studies; collected scientific papers). Edited by S.E. Sukhol'skiĭ and M.M. Koreĭsha, Moscow, Stroĭizdat, 1985, p.49-55, In Russian. 11 refs.

Diagenesis, Cryogenic structures, Marine deposits, Lacustrine deposits

50-246

Forecasting settlement from thawing of frozen ground in the building areas of Urgal (BAM). [Prognoz osadki pri protaivanii merzlykh gruntov na territorii zastroĭki g. Urgala (BAM)]

Evtushenko, S.I., Mavrodi, V.Kh., Sukhodol'skaia, L.A., Cherniad'ev, V.P., Regional'nye geokriologicheskie issledovaniia; sbornik nauchnykh trudov (Regional geocryological studies; collected scientific papers). Edited by S.E. Sukhol'skiĭ and M.M. Koreĭsha, Moscow, Stroĭizdat, 1985, p.55-61, In Russian. 1 ref.

Frozen ground settling, Ground thawing, Permafrost beneath structures, Active layer, Cold weather construction, Russia—Siberia, Russia—Urgal

50-247

Engineering-geocryological environment of Punginskiy region and forecasting changes in its natural conditions during the operation of engineering structures. [Inzhenerno-geokriologicheskaia obstanovka Punginskogo raĭona i prognoz ee izmeneniia v estestvennykh usloviiakh pri ekspluatatsii inzhenernykh sooruzheniĭ]

Shamanova, I.I., Chekhovskiĭ, A.L., Uvarkin, IU.T., Regional'nye geokriologicheskie issledovaniia; sbornik nauchnykh trudov (Regional geocryological studies; collected scientific papers). Edited by S.E. Sukhol'skiĭ and M.M. Koreĭsha, Moscow, Stroĭizdat, 1985, p.61-70, In Russian. 5 refs.

Engineering geology, Geocryology, Environmental impact, Permafrost preservation, Permafrost thermal properties, Permafrost depth, Peat, Thaw depth, Russia—Siberia, Russia—Punginsk

50-248

Formation characteristics of the thermal regime of rocks in various geomorphological conditions of the middle course of the Vitim River. [Osobennosti formirovaniia temperaturnogo rezhima porod v razlichnykh geomorfologichesikh usloviiakh srednego techeniia r. Vitim]

Leĭbman, M.O., Regional'nye geokriologicheskie issledovaniia; sbornik nauchnykh trudov (Regional geocryological studies: collected scientific papers). Edited by S.E. Sukhol'skiĭ and M.M. Koreĭsha, Moscow, Stroĭizdat, 1985, p.70-84, In Russian. 6 refs.

Frozen rock temperature, Thermal regime, Geomorphology, Mosses, Temperature gradients, Slope orientation, Snow cover effect, Russia—Vitim River

50-249

Effect of the process of perennial freezing of rocks on the water saturation of coal basins in Yakutia and the Far East. [Vliianie protsessa mnogoletnego promerzaniia porod na obvodnennost' ugol'nykh basseĭnov IAKutii i Dal'nego Vostoka]

Elisafenko, T.N., Regional'nye geokriologicheskie issledovaniia; sbornik nauchnykh trudov (Regional geocryological studies; collected scientific papers). Edited by S.E. Sukhol'skiĭ and M.M. Koreĭsha, Moscow, Stroĭizdat, 1985, p.84-93, In Russian. 7 refs.

Frozen rocks, Frozen rock temperature, Air temperature, Coal, Geocryology, Hydrogeology, Russia—Yakutia

50-250

Distribution of snow cover in built-up areas (in the example of the city of Labytnangi, Yamalo-Nenets National District). [Raspredelenie snezhnogo pokrova na zastroennoĭ territorii (na primere g. Labytnangi, IAmalo-Nenetskiĭ natsional'nyĭ okrug)]

Lukichev, V.F., Regional'nye geokriologicheskie issledovaniia; sbornik nauchnykh trudov (Regional geocryological studies; collected scientific papers). Edited by S.E. Sukhol'skiĭ and M.M. Koreĭsha, Moscow, Stroĭizdat, 1985. p.93-98, In Russian. 1 ref.

Snow cover distribution, Snow water content, Tundra terrain, Snow depth, Snow density, Russia—Labytnangi, Russia—Nenets National District

50-251

Development of the North and the problem of recultivation. Reports from the 2nd International Conference (Syktyvkar, 25-28 April 1994). [Osvoenie Severa i problema rekul'tivatsii. Doklady II Mezhdunarodnoĭ konferentsii (Syktyvkar, 25-28 aprelia 1994 goda)]

International Conference on the Development of the North and the Problem of Recultivation, 2nd, Syktyvkar, Apr. 25-28, 1994, Degteva, S.V., ed, Syktyvkar, Institut biologii, Komi NTs UrO RAN, 1994, 498p., In Russian and English, with English abstract. Refs. passim. For selected papers see 50-252 through 50-306.

Revegetation, Ecology, Environmental impact, Environmental protection, Plants (botany), Tundra vegetation

50-252

Problems of protection and restoration of land resources in the Komi Republic. [Problemy okhrany i vosstanovleniia zemel'nykh resursov Respubliki Komi]

Ermakov, A.A., Konkin, P.I., Osvoenie Severa i problema rekul'tivatsii. Doklady II Mezhdunarodnoĭ konferentsii (Syktyvkar, 25-28 aprelia 1994 goda) (Development of the North and the problem of recultivation. Reports from the 2nd International Conference (Syktyvkar, 25-28 April 1994). Edited by S.V. Degteva, Syktyvkar, Institut biologii Komi NTs UrO RAN, 1994, p.17-23, In Russian.

Land reclamation, Environmental protection, Soil pollution, Russia—Komi

50-253

Necessity and means of recultivating disturbed lands in the North. [Neobkhodimost' i vozmozhnost' rekul'tivatsii naryshennykh zemel' na Severe]

Kriuchkov, V.V., Osvoenie Severa i problema rekul'tivatsii. Doklady II Mezhdunarodnoĭ konferentsii (Syktyvkar, 25-28 aprelia 1994 goda) (Development of the North and the problem of recultivation. Reports from the 2nd International Conference (Syktyvkar, 25-28 April 1994). Edited by S.V. Degteva, Syktyvkar, Institut biologii Komi NTs UrO RAN, 1994, p.23-32, In Russian.

Land reclamation, Environmental protection, Tundra vegetation, Revegetation

50-254

Practical solution to the problems of biological recultivation in the Far North. [Prakticheskoe reshenie zadach biologicheskoĭ rekul'tivatsii na Kraĭnem Severe]

Archegova, I.B., Degteva, S.V., Kotelina, N.S., Turubanova, L.P., IUnonina, A.A., Osvoenie Severa i problema rekul'tivatsii. Doklady II Mezhdunarodnoĭ konferentsii (Syktyvkar, 25-28 aprelia 1994 goda) (Development of the North and the problem of recultivation. Reports from the 2nd International Conference (Syktyvkar, 25-28 April 1994). Edited by S.V. Degteva, Syktyvkar, Institut biologii Komi NTs UrO RAN, 1994, p.33-40, In Russian.

Land reclamation, Environmental protection, Tundra, Ecosystems, Ecology, Russia—Far North

50-255

Ecological monitoring as a means of protecting the stability of tundra ecosystems in oil extraction regions. [Ekologicheskiĭ monitoring kak uslovie sokhraneniia ustoĭchivosti tundrovykh ekosistem v raĭonakh dobychi nefti]

Solov'ev, V.A., Akul'shina, N.P., Novakovskaia, T.V., Dolgin, M.M., Osvoenie Severa i problema rekul'tivatsii. Doklady II Mezhdunarodnoĭ konferentsii (Syktyvkar, 25-28 aprelia 1994 goda) (Development of the North and the problem of recultivation. Reports from the 2nd International Conference (Syktyvkar, 25-28 April 1994). Edited by S.V. Degteva, Syktyvkar, Institut biologii Komi NTs UrO RAN, 1994, p.40-47, In Russian.

Tundra, Ecosystems, Environmental protection, Oil recovery, Ecology, Tundra vegetation

50-256

Effect of technogenic factors (air pollution) on vegetation and the animal complex on tundra landscapes. [Vliianie tekhnogennykh faktorov (zagriaznenie atmosfery) na rastitel'nost' i zhivotnyĭ kompleks tundrovykh landshaftov]

Polshvedkin, V.V., Osvoenie Severa i problema rekul'tivatsii. Doklady II Mezhdunarodnoĭ konferentsii (Syktyvkar, 25-28 aprelia 1994 goda) (Development of the North and the problem of recultivation. Reports from the 2nd International Conference (Syktyvkar, 25-28 April 1994). Edited by S.V. Degteva, Syktyvkar, Institut biologii Komi NTs UrO RAN, 1994, p.47-52, In Russian.

Tundra terrain, Tundra vegetation, Air pollution, Environmental impact, Forest tundra, Russia—Far North

50-257

Evaluating the anthropogenic transformation of vegetation according to the hemerobicity scale in forest tundra and tundra in the European Northeast (Nenets Autonomous District). [Otsenka antropogennoĭ transformatsii rastitel'nosti po shkale gemerobnosti v lesotundre i tundre Evropeĭskogo Severo-Vostoka (Nenetskiĭ avtonomnyĭ okrug)]

Akul'shina, N.P., Novakovskaia, T.V., Osvoenie Severa i problema rekul'tivatsii. Doklady II Mezhdunarodnoĭ konferentsii (Syktyvkar, 25-28 aprelia 1994 goda) (Development of the North and the problem of recultivation. Reports from the 2nd International Conference (Syktyvkar, 25-28 April 1994). Edited by S.V. Degteva, Syktyvkar, Institut biologii Komi NTs UrO RAN, 1994, p.53-64, In Russian. 4 refs.

Tundra vegetation, Forest tundra, Environmental impact, Plants (botany), Russia—Nenets Autonomous District

50-258

Reaction of plant communities to technogenic disturbances in the subzone of northern hypoarctic tundras in Yamal. [Reaktsiia rastitel'nykh soobshchestv na tekhnogennye narusheniia v podzone severnykh gipoarkticheskikh tundr IAmala]

Khitun, O.V., Rebristaia, O.V., Osvoenie Severa i problema rekul'tivatsii. Doklady II Mezhdunarodnoĭ konferentsii (Syktyvkar, 25-28 aprelia 1994 goda) (Development of the North and the problem of recultivation. Reports from the 2nd International Conference (Syktyvkar, 25-28 April 1994). Edited by S.V. Degteva, Syktyvkar, Institut biologii Komi NTs UrO RAN, 1994, p.64-71, In Russian. 2 refs.

Tundra vegetation, Subpolar regions, Environmental impact, Plants (botany), Mosses, Grasses, Revegetation, Russia—Yamal Peninsula

50-259

Evaluating the potential stability of natural complexes in the cryolithozone of Bol'shezemel'skaya tundra under technogenic disturbances. [Otsenka potentsial'noĭ ustoĭchivosti prirodnykh kompleksov kriolitozony Bol'shezemel'skoĭ tundry k tekhnogennym narusheniiam]

Demanov, V.E., Kirikova, N.S., Osadchaia, G.G., Osvoenie Severa i problema rekul'tivatsii. Doklady II Mezhdunarodnoĭ konferentsii (Syktyvkar, 25-28 aprelia 1994 goda) (Development of the North and the problem of recultivation. Reports from the 2nd International Conference (Syktyvkar, 25-28 April 1994). Edited by S.V. Degteva, Syktyvkar, Institut biologii Komi NTs UrO RAN, 1994, p.71-78, In Russian. 7 refs.

Geocryology, Tundra terrain, Environmental impact, Frozen ground, Ground thawing, Active layer, Soil erosion, Russia—Bol'shezemel'skaya Tundra

50-260

Ecologic-geographical basis for monitoring technogenic oil and gas polluted territories in the Usinsk region. [Ekologo-geograficheskoe obosnovanie monitoringa na tekhnogennykh neftezagriaznennykh territoriiakh Usinskogo raĭona]

Evdokimova, T.V., Kuznetsova, E.G., Zheleznova, G.V., Osvoenie Severa i problema rekul'tivatsii. Doklady II Mezhdunarodnoĭ konferentsii (Syktyvkar, 25-28 aprelia 1994 goda) (Development of the North and the problem of recultivation. Reports from the 2nd International Conference (Syktyvkar, 25-28 April 1994). Edited by S.V. Degteva, Syktyvkar, Institut biologii Komi NTs UrO RAN, 1994, p.79-86, In Russian.

Environmental impact, Environmental protection, Revegetation, Russia—Usinsk

50-261

Creation of a single computer database on anthropogenic arctic vegetation with the aim of studying anthropogenic changes in tundra ecosystems. [Sozdanie edinogo komp'iuternogo banka dannykh po antropogennoĭ rastitel'nosti arktiki v tseliakh izucheniia antropogennykh izmeneniĭ tundrovykh ekosistem]

Sumina, O.I., Osvoenie Severa i problema rekul'tivatsii. Doklady II Mezhdunarodnoĭ konferentsii (Syktyvkar, 25-28 aprelia 1994 goda) (Development of the North and the problem of recultivation. Reports from the 2nd International Conference (Syktyvkar, 25-28 April 1994). Edited by S.V. Degteva, Syktyvkar, Institut biologii Komi NTs UrO RAN, 1994, p.87-92, In Russian. 5 refs.

Data processing, Environmental impact, Introduced plants, Revegetation, Tundra vegetation, Tundra terrain, Ecosystems, Plants (botany), Computer applications, Russia—Chukotskiy Peninsula, Russia—Amguema River

50-262

Analyzing frozen soil stability in natural territorial complexes of oil and gas production regions of Western Siberia. [Otsenka merzlotno-landshaftnoĭ ustoĭchhivosti prirodno-territorial'nykh kompleksov v raĭonakh neftedobychi Zapadnoĭ Sibiri]

Tumel', N.V., Zotova, L.I., Osvoenie Severa i problema rekul'tivatsii. Doklady II Mezhdunarodnoĭ konferentsii (Syktyvkar, 25-28 aprelia 1994 goda) (Development of the North and the problem of recultivation. Reports from the 2nd International Conference (Syktyvkar, 25-28 April 1994). Edited by S.V. Degteva, Syktyvkar, Institut biologii Komi NTs UrO RAN, 1994, p.93-100, In Russian.

Environmental impact, Ecology, Stability, Russia—Siberia

50-263

Vegetation cover in technogenic regions of Northern Europe. [Rastitel'nyĭ pokrov tekhnogennykh uchastkov na evropeĭskom Severe]

Gruzdev, B.I., Martynenko, V.A., Osvoenie Severa i problema rekul'tivatsii. Doklady II Mezhdunarodnoĭ konferentsii (Syktyvkar, 25-28 aprelia 1994 goda) (Development of the North and the problem of recultivation. Reports from the 2nd International Conference (Syktyvkar, 25-28 April 1994). Edited by S.V. Degteva, Syktyvkar, Institut biologii Komi NTs UrO RAN, 1994, p.101-107, In Russian.

Vegetation, Protective vegetation, Vegetation patterns, Environmental impact, Plants (botany), Tundra vegetation, Taiga, Ecosystems, Russia—Far North

50-264

Stability of coenopopulations of rose root stonecrop in the subpolar Urals. [Ustoĭchivost' tsenopopuliatsiĭ rodioly rozovoĭ na Pripoliarnom Urale]

Frolov, IU.M., Poletaeva, I.I., Osvoenie Severa i problema rekul'tivatsii. Doklady II Mezhdunarodnoĭ konferentsii (Syktyvkar, 25-28 aprelia 1994 goda) (Development of the North and the problem of recultivation. Reports from the 2nd International Conference (Syktyvkar, 25-28 April 1994). Edited by S.V. Degteva, Syktyvkar, Institut biologii Komi NTs UrO RAN, 1994, p.107-117, In Russian. 14 refs.

Plants (botany), Plant physiology, Plant ecology, Subarctic landscapes, Ural Mountains

50-265

Analyzing the composition of tundra shrub vegetation in regions of Central Yamal where condensed gas deposits are developed. [Otsenka sostoianiia kustarnikovoĭ rastitel'nosti tundr v raĭonakh osvoeniia gazokondensatnykh mestorozhdeniĭ Srednego IAmala]

Aref'ev, S.P., Osvoenie Severa i problema rekul'tivatsii. Doklady II Mezhdunarodnoĭ konferentsii (Syktyvkar, 25-28 aprelia 1994 goda) (Development of the North and the problem of recultivation. Reports from the 2nd International Conference (Syktyvkar, 25-28 April 1994). Edited by S.V. Degteva, Syktyvkar, Institut biologii Komi NTs UrO RAN, 1994, p.117-122, In Russian.

Tundra vegetation, Plants (botany), Environmental impact, Gas production, Russia—Yamal Peninsula

50-266

Vegetation in industrial regions of Northeastern Yakutia and the problem of its biological recultivation. [Rastitel'nost' tekhnogennykh landshaftov Severo-Vostoka IAkutii i problema ikh biologicheskoĭ rekul'tivatsii]

Mironova, S.I., Osvoenie Severa i problema rekul'tivatsii. Doklady II Mezhdunarodnoĭ konferentsii (Syktyvkar, 25-28 aprelia 1994 goda) (Development of the North and the problem of recultivation. Reports from the 2nd International Conference (Syktyvkar, 25-28 April 1994). Edited by S.V. Degteva, Syktyvkar, Institut biologii Komi NTs UrO RAN, 1994, p.122-129, In Russian. 20 refs.

Vegetation, Revegetation, Environmental impact, Plants (botany), Vegetation patterns, Russia—Yakutia

50-267

Lichens as an object of technogenic impact. [Lishaĭniki kak ob"ekt tekhnogennykh vozdeĭstviĭ]

Magomedova, M.A., Morozova, L.M., Osvoenie Severa i problema rekul'tivatsii. Doklady II Mezhdunarodnoĭ konferentsii (Syktyvkar, 25-28 aprelia 1994 goda) (Development of the North and the problem of recultivation. Reports from the 2nd International Conference (Syktyvkar, 25-28 April 1994). Edited by S.V. Degteva, Syktyvkar, Institut biologii Komi NTs UrO RAN, 1994, p.129-133, In Russian.

Lichens, Plants (botany), Environmental impact, Tundra vegetation

50-268

Some regularities in the formation of algal flora in disturbed tundra ecosystems. [Nekotorye zakonomernosti formirovaniia al'goflory narushennykh ekosistem tundry]

Sharipova, M.IU., Dubovik, I.E., Shkundina, F.B., Osvoenie Severa i problema rekul'tivatsii. Doklady II Mezhdunarodnoĭ konferentsii (Syktyvkar, 25-28 aprelia 1994 goda) (Development of the North and the problem of recultivation. Reports from the 2nd International Conference (Syktyvkar, 25-28 April 1994). Edited by S.V. Degteva, Syktyvkar, Institut biologii Komi NTs UrO RAN, 1994, p.134-143, In Russian. 9 refs.

Algae, Plants (botany), Tundra vegetation, Ecosystems, Environmental impact

50-269

Heat and moisture supply of natural biogeocenoses in the Northern, Subpolar and Polar Urals. [Teplo- i vlagoobespechennost' estestvennykh biogeotsenozov Severnogo, Pripoliarnogo i Poliarnogo Urala]

Belonenko, G.V., Popova, N.B., Osvoenie Severa i problema rekul'tivatsii. Doklady II Mezhdunarodnoĭ konferentsii (Syktyvkar, 25-28 aprelia 1994 goda) (Development of the North and the problem of recultivation. Reports from the 2nd International Conference (Syktyvkar, 25-28 April 1994). Edited by S.V. Degteva, Syktyvkar, Institut biologii Komi NTs UrO RAN, 1994, p.143-148, In Russian.

Heat sources, Moisture, Precipitation (meteorology), Ecology, Environmental protection, Tundra, Seasonal variations, Russia—Ural Mountains

50-270

Phenotype and chromosome variability in larch in Ural forest ecosystems. [Fenotipicheskaia i khromosomnaia izmenchivost' listvennitsy v lesnykh ekosistemakh Urala]

Putenikhin, V.P., Farukshina, G.G., Osvoenie Severa i problema rekul'tivatsii. Doklady II Mezhdunarodnoĭ konferentsii (Syktyvkar, 25-28 aprelia 1994 goda) (Development of the North and the problem of recultivation. Reports from the 2nd International Conference (Syktyvkar, 25-28 April 1994). Edited by S.V. Degteva, Syktyvkar, Institut biologii Komi NTs UrO RAN, 1994, p.149-155, In Russian. 6 refs.

Trees (plants), Forest ecosystems, Plant physiology, Arctic landscapes, Russia—Ural Mountains

50-271

Population-genetic differentiation in high mountain and central mountain populations of Sukaczew larch. [Populiatsionno-geneticheskaia differentsiatsiia vysokogornykh i srednegornykh populiatsiĭ listvennitsy Sukacheva]

Timer'ianov, A.Sh., Putenikhin, V.P., IAnbaev, IU.A., Osvoenie Severa i problema rekul'tivatsii. Doklady II Mezhdunarodnoĭ konferentsii (Syktyvkar, 25-28 aprelia 1994 goda) (Development of the North and the problem of recultivation. Reports from the 2nd International Conference (Syktyvkar, 25-28 April 1994). Edited by S.V. Degteva, Syktyvkar, Institut biologii Komi NTs UrO RAN, 1994, p.155-159, In Russian. 7 refs.

Trees (plants), Plant physiology, Alpine tundra, Russia—Ural Mountains

50-272

Genetic differentiation in the population of common pine (*Pinus sylvestris* L.) in northwestern Russia. [Geneticheskaia differentsiatsiia populiatsiĭ sosny obyknovennoĭ (*Pinus sylvestris* L.) na severo-zapade Rossii]

IAnbaev, IU.A., Shiganov, Z.Kh., Trenin, V.V., Chistiakov, B.A., Osvoenie Severa i problema rekul'tivatsii. Doklady II Mezhdunarodnoĭ konferentsii (Syktyvkar, 25-28 aprelia 1994 goda) (Development of the North and the problem of recultivation. Reports from the 2nd International Conference (Syktyvkar, 25-28 April 1994). Edited by S.V. Degteva, Syktyvkar, Institut biologii Komi NTs UrO RAN, 1994, p.159-165, In Russian. 13 refs.

Trees (plants), Plant physiology, Arctic landscapes, Russia

50-273

Analyzing the stability of soil-vegetation cover under mechanical forces. [Opyt otsenki ustoĭchivosti pochvenno-rastitel'nogo pokrova k mekhanicheskim vozdeĭstviiam]

Zvereva, T.S., Osvoenie Severa i problema rekul'tivatsii. Doklady II Mezhdunarodnoĭ konferentsii (Syktyvkar, 25-28 aprelia 1994 goda) (Development of the North and the problem of recultivation. Reports from the 2nd International Conference (Syktyvkar, 25-28 April 1994). Edited by S.V. Degteva, Syktyvkar, Institut biologii Komi NTs UrO RAN, 1994, p.166-172, In Russian. 3 refs.

Environmental impact, Active layer, Soil mechanics, Vegetation patterns, Cryogenic soils

50-274

Indicators of soil polluted by heavy metals. [Pokazateli zagriazneniia pochv tiazhelymi metallami]

El'kina, G.IA., Beznosikov, V.A., Osvoenie Severa i problema rekul'tivatsii. Doklady II Mezhdunarodnoĭ konferentsii (Syktyvkar, 25-28 aprelia 1994 goda) (Development of the North and the problem of recultivation. Reports from the 2nd International Conference (Syktyvkar, 25-28 April 1994). Edited by S.V. Degteva, Syktyvkar, Institut biologii Komi NTs UrO RAN, 1994, p.172-177, In Russian.

Soil pollution, Environmental impact, Metals, Podsol, Biomass

50-275

Reestablishing the trophic function of soils as a basic trend in biological recultivation of disturbed territories in the North. [Vosstanovlenie troficheskoĭ funktsii pochv, kak osnovnoe napravlenie biologicheskoĭ rekul'tivatsii narushennykh territoriĭ Severa]

Popov, A.I., Chertov, O.G., Osvoenie Severa i problema rekul'tivatsii. Doklady II Mezhdunarodnoĭ konferentsii (Syktyvkar, 25-28 aprelia 1994 goda) (Development of the North and the problem of recultivation. Reports from the 2nd International Conference (Syktyvkar, 25-28 April 1994). Edited by S.V. Degteva, Syktyvkar, Institut biologii Komi NTs UrO RAN, 1994, p.177-182, In Russian. 6 refs.

Revegetation, Environmental protection, Soil microbiology, Plants (botany), Plant physiology, Plant ecology

50-276

Analyzing the transformation of organic matter in anthropogenically altered soil by chemical-breakdown fractionation. [Otsenka transformatsii organicheskogo veshchestva antropogenno izmennykh pochv metodom khemodestruktsionnogo fraktsionirovaniia]

Popov, A.I., Chertov, O.G., Nadporozhskaia, M.A., Osvoenie Severa i problema rekul'tivatsii. Doklady II Mezhdunarodnoĭ konferentsii (Syktyvkar, 25-28 aprelia 1994 goda) (Development of the North and the problem of recultivation. Reports from the 2nd International Conference (Syktyvkar, 25-28 April 1994). Edited by S.V. Degteva, Syktyvkar, Institut biologii Komi NTs UrO RAN, 1994, p.183-187, In Russian. 5 refs.

Organic soils, Ecology, Hydrothermal processes, Soil physics

50-277

Analyzing the composition of ecosystems of land in the Noril'sk industrial region. [Otsenka sostoianiia ekosistem sushi v Noril'skom promyshlennom raĭone]

Igamberdiev, V.M., Tereshenkov, O.M., Kutyev, Kh.A., Osvoenie Severa i problema rekul'tivatsii. Doklady II Mezhdunarodnoĭ konferentsii (Syktyvkar, 25-28 aprelia 1994 goda) (Development of the North and the problem of recultivation. Reports from the 2nd International Conference (Syktyvkar, 25-28 April 1994). Edited by S.V. Degteva, Syktyvkar, Institut biologii Komi NTs UrO RAN, 1994, p.188-197, In Russian.

Ecosystems, Environmental impact, Air pollution, Snow impurities, Snowmelt, Soil pollution, Russia—Noril'sk

50-278

Studying arctic and subarctic ecosystems of impact regions using remote monitoring methods. [Izuchenie Arkticheskikh i Subarkticheskikh ekosistem impaktnykh raĭonov s ispol'zovaniem metodov distantsionnogo monitoringa]

Tereshenkov, O.M., Kutyev, Kh.A., Kolesnikov, V.I., Popova, E.N., Osvoenie Severa i problema rekul'tivatsii. Doklady II Mezhdunarodnoĭ konferentsii (Syktyvkar, 25-28 aprelia 1994 goda) (Development of the North and the problem of recultivation. Reports from the 2nd International Conference (Syktyvkar, 25-28 April 1994). Edited by S.V. Degteva, Syktyvkar, Institut biologii Komi NTs UrO RAN, 1994, p.197-202, In Russian.

Environmental protection, Environmental impact, Remote sensing, Monitors, Ecosystems, Warning systems, Mining, Oil recovery, Gas production, Russia—Noril'sk

50-279

Transformation of an enzyme pool in cultivated podsol soil by the action of mineral fertilizers and heavy metals. [Transformatsiia fermentnogo pula v okul'turennoĭ podzolistoĭ pochve pod vozdeĭstviem meliorantov i tiazhelykh metallov]

Freger, V.M., Osvoenie Severa i problema rekul'tivatsii. Doklady II Mezhdunarodnoĭ konferentsii (Syktyvkar, 25-28 aprelia 1994 goda) (Development of the North and the problem of recultivation. Reports from the 2nd International Conference (Syktyvkar, 25-28 April 1994). Edited by S.V. Degteva, Syktyvkar, Institut biologii Komi NTs UrO RAN, 1994, p.202-208, In Russian. 8 refs.

Podsol, Agriculture, Soil physics, Metals, Soil chemistry, Soil microbiology

50-280

Possibility of using soil algae in improving disturbed tundra lands. [O vozmozhnosti ispol'zovaniia pochvennykh vodorosleĭ pri melioratsii narushennykh zemel' tundry]

Dubovik, I.E., Sharipova, M.IU., Khabibullin, I.L., Minibaev, R.G., Osvoenie Severa i problema rekul'tivatsii. Doklady II Mezhdunarodnoĭ konferentsii (Syktyvkar, 25-28 aprelia 1994 goda) (Development of the North and the problem of recultivation. Reports from the 2nd International Conference (Syktyvkar, 25-28 April 1994). Edited by S.V. Degteva, Syktyvkar, Institut biologii Komi NTs UrO RAN, 1994, p.208-214, In Russian. 4 refs.

Algae, Revegetation, Protective vegetation, Tundra soils, Tundra vegetation, Plants (botany), Russia—Far North

50-281

Searching for ways of stimulating oil biodegradation in soil. [Poiski metodov stimuliatsii biodegradatsii nefti v pochve]

Kazakova, E.N., Oborin, A.A., Osvoenie Severa i problema rekul'tivatsii. Doklady II Mezhdunarodnoĭ konferentsii (Syktyvkar, 25-28 aprelia 1994 goda) (Development of the North and the problem of recultivation. Reports from the 2nd International Conference (Syktyvkar, 25-28 April 1994). Edited by S.V. Degteva, Syktyvkar, Institut biologii Komi NTs UrO RAN, 1994, p.214-217, In Russian.

Crude oil, Degradation, Soil pollution, Environmental impact, Peat, Environmental protection, Oil spills, Russia—Siberia

50-282

Strategy for the protection of pine crops in territories being recultivated. [Strategiia zashchity sosnovykh kul'tur na rekul'tiviruemykh territoriiakh]

IUrkina, E.V., Shergina, N.N., Osvoenie Severa i problema rekul'tivatsii. Doklady II Mezhdunarodnoĭ konferentsii (Syktyvkar, 25-28 aprelia 1994 goda) (Development of the North and the problem of recultivation. Reports from the 2nd International Conference (Syktyvkar, 25-28 April 1994). Edited by S.V. Degteva, Syktyvkar, Institut biologii Komi NTs UrO RAN, 1994, p.229-238, In Russian. 4 refs.

Environmental protection, Revegetation, Trees (plants), Plant physiology, Russia—Komi

50-283

Analyzing the state of Ural tributaries of the Ob' River according to zoobenthos indicators. [Otsenka sostoianiia ural'skikh pritokov Obi po pokazateliam zoobentosa]

Sharapova, T.A., Stepanova, V.B., Buslenko, N.M., Osvoenie Severa i problema rekul'tivatsii. Doklady II Mezhdunarodnoĭ konferentsii (Syktyvkar, 25-28 aprelia 1994 goda) (Development of the North and the problem of recultivation. Reports from the 2nd International Conference (Syktyvkar, 25-28 April 1994). Edited by S.V. Degteva, Syktyvkar, Institut biologii Komi NTs UrO RAN, 1994, p.238-241, In Russian.

Rivers, Water pollution, Environmental impact, Animals, Ecology, Biomass, Tundra, Russia—Ob' River

50-284

Reestablishment and protection of biodiversity in the European taiga: special role of forests in the Komi Republic. [Vosstanovlenie i sokhranenie bioraznoobraziia evropeĭskoĭ taĭgi: osobaia rol' lesov Respubliki Komi]

Anufriev, V.M., Osvoenie Severa i problema rekul'tivatsii. Doklady II Mezhdunarodnoĭ konferentsii (Syktyvkar, 25-28 aprelia 1994 goda) (Development of the North and the problem of recultivation. Reports from the 2nd International Conference (Syktyvkar, 25-28 April 1994). Edited by S.V. Degteva, Syktyvkar, Institut biologii Komi NTs UrO RAN, 1994, p.244-250, In Russian.

Environmental protection, Taiga, Forest land, Forest ecosystems, Russia—Komi

50-285

Environmental changes in the North under the influence of technogenic factors in the example of the reserve "Pasvik". [Izmeneniia prirody Severa pod vliianiem tekhnogennykh faktorov na primere zapovednika "Pasvik"]

Makarova, O.A., Osvoenie Severa i problema rekul'tivatsii. Doklady II Mezhdunarodnoĭ konferentsii (Syktyvkar, 25-28 aprelia 1994 goda) (Development of the North and the problem of recultivation. Reports from the 2nd International Conference (Syktyvkar, 25-28 April 1994). Edited by S.V. Degteva, Syktyvkar, Institut biologii Komi NTs UrO RAN, 1994, p.250-254, In Russian. 5 refs.

Environmental protection, Environmental impact, Taiga, Forest tundra, Tundra terrain, River basins, Russia—Murmansk, Russia—Paz River

50-286

Effect of air pollution on soil invertebrates (mesofauna) in the Lapland biosphere reserve and its vicinity. [Vliianie zagriazneniia vozdukha na pochvennykh bespozvonochnykh (mezofaunu) v Laplandskom biosfernom zapovednike i ego okrestnostiakh]

Giliazova, E.V., Osvoenie Severa i problema rekul'tivatsii. Doklady II Mezhdunarodnoĭ konferentsii (Syktyvkar, 25-28 aprelia 1994 goda) (Development of the North and the problem of recultivation. Reports from the 2nd International Conference (Syktyvkar, 25-28 April 1994). Edited by S.V. Degteva, Syktyvkar, Institut biologii Komi NTs UrO RAN, 1994, p.260-264, In Russian. 9 refs.

Air pollution, Environmental impact, Environmental protection, Biomass, Ecosystems, Lichens, Finland—Lapland, Russia—Murmansk

50-287

Rational methods of using and recultivating agricultural terrain in Northeastern Russia. [Ratsional'nye priemy ispol'zovaniia i rekul'tivatsii agrolandshaftov Severo-Vostoka Rossii]

Pugachev, A.A., Ukhov, N.V., Osvoenie Severa i problema rekul'tivatsii. Doklady II Mezhdunarodnoĭ konferentsii (Syktyvkar, 25-28 aprelia 1994 goda) (Development of the North and the problem of recultivation. Reports from the 2nd International Conference (Syktyvkar, 25-28 April 1994). Edited by S.V. Degteva, Syktyvkar, Institut biologii Komi NTs UrO RAN, 1994, p.265-273, In Russian.

Revegetation, Agriculture, Tundra soils, Environmental protection, Thermokarst, Microrelief, Russia

50-288

Growing perennial grasses on dredging grounds in Southern Yakutia. [Vyrashchivanie mnogoletnikh zlakovykh trav na drazhnykh poligonakh v IUzhnoĭ IAkutii]

Petrova, A.N., Osvoenie Severa i problema rekul'tivatsii. Doklady II Mezhdunarodnoĭ konferentsii (Syktyvkar, 25-28 aprelia 1994 goda) (Development of the North and the problem of recultivation. Reports from the 2nd International Conference (Syktyvkar, 25-28 April 1994). Edited by S.V. Degteva, Syktyvkar, Institut biologii Komi NTs UrO RAN, 1994, p.273-282, In Russian.

Ecosystems, Environmental impact, Grasses, Revegetation, Plants (botany), Russia—Yakutia, Russia—Murmansk

50-289

Ecological-biological and economic bases for recultivating the ecosystems in the Russian Arctic. [Ekologo-biologicheskie i ekonomicheskie osnovy rekul'tivatsii ekosistem Arktiki Rossii]

Zarubin, S.I., Loginov, L.F., Kolmakov, V.P., Osvoenie Severa i problema rekul'tivatsii. Doklady II Mezhdunarodnoĭ konferentsii (Syktyvkar, 25-28 aprelia 1994 goda) (Development of the North and the problem of recultivation. Reports from the 2nd International Conference (Syktyvkar, 25-28 April 1994). Edited by S.V. Degteva, Syktyvkar, Institut biologii Komi NTs UrO RAN, 1994, p.282-290, In Russian. 19 refs.

Revegetation, Environmental impact, Environmental protection, Peat, Ecosystems, Models, Economic analysis, Russia

50-290

Forest recultivation of disturbed lands in the far northern taiga zone of the Komi Republic. [Lesnaia rekul'tivatsiia narushennykh zemel' v zone kraĭne-severnoĭ taĭgi Respubliki Komi]

Parfeniuk, V.I., Osvoenie Severa i problema rekul'tivatsii. Doklady II Mezhdunarodnoĭ konferentsii (Syktyvkar, 25-28 aprelia 1994 goda) (Development of the North and the problem of recultivation. Reports from the 2nd International Conference (Syktyvkar, 25-28 April 1994). Edited by S.V. Degteva, Syktyvkar, Institut biologii Komi NTs UrO RAN, 1994, p.290-295, In Russian.

Revegetation, Forestry, Taiga, Russia—Komi

50-291

Results of the technological improvement of biological recultivation of soils on linear structures in the Komi Republic. [Rezul'taty sovershenstvovaniia tekhnologii biologicheskoĭ rekul'tivatsii gruntov na lineĭnykh sooruzheniiakh Respubliki Komi]

Lobovikov, N.N., Lobovikova, V.F., Osvoenie Severa i problema rekul'tivatsii. Doklady II Mezhdunarodnoĭ konferentsii (Syktyvkar, 25-28 aprelia 1994 goda) (Development of the North and the problem of recultivation. Reports from the 2nd International Conference (Syktyvkar, 25-28 April 1994). Edited by S.V. Degteva, Syktyvkar, Institut biologii Komi NTs UrO RAN, 1994, p.295-299, In Russian.

Revegetation, Environmental impact, Environmental protection, Roads, Petroleum industry, Protective vegetation, Grasses, Russia—Komi

50-292

Monitoring sown meadows in eastern European tundra. [Monitoring na seianykh lugakh vostochno-evropeĭskoĭ tundry]

Kotelina, N.S., Turubanova, L.P., Osvoenie Severa i problema rekul'tivatsii. Doklady II Mezhdunarodnoĭ konferentsii (Syktyvkar, 25-28 aprelia 1994 goda) (Development of the North and the problem of recultivation. Reports from the 2nd International Conference (Syktyvkar, 25-28 April 1994). Edited by S.V. Degteva, Syktyvkar, Institut biologii Komi NTs UrO RAN, 1994, p.299-307, In Russian. 4 refs.

Tundra terrain, Tundra soils, Meadow soils, Grasses, Tundra vegetation, Russia—Vorkuta

50-293

On phyto-recultivation of technologically disturbed lands with the use of carbomide-formaldehyde foam, sapropel. [K voprosu o fitorekul'tivatsii tekhnogenno-narushennykh zemel' s ispol'zovaniem KPF, sapropeleĭ]

Valeeva, E.I., Osvoenie Severa i problema rekul'tivatsii. Doklady II Mezhdunarodnoĭ konferentsii (Syktyvkar, 25-28 aprelia 1994 goda) (Development of the North and the problem of recultivation. Reports from the 2nd International Conference (Syktyvkar, 25-28 April 1994). Edited by S.V. Degteva, Syktyvkar, Institut biologii Komi NTs UrO RAN, 1994, p.307-313, In Russian.

Revegetation, Environmental impact, Soil pollution, Soil chemistry, Frost resistance, Sapropel, Russia—Yamal Peninsula

50-294

Role of plant reproduction in the problem of recultivating the vegetation cover in Far North regions. [Rol' reproduktsii rasteniĭ v probleme rekul'tivatsii rastitel'nogo pokrova v raĭonakh Kraĭnego Severa]

Khodachek, E.A., Osvoenie Severa i problema rekul'tivatsii. Doklady II Mezhdunarodnoĭ konferentsii (Syktyvkar, 25-28 aprelia 1994 goda) (Development of the North and the problem of recultivation. Reports from the 2nd International Conference (Syktyvkar, 25-28 April 1994). Edited by S.V. Degteva, Syktyvkar, Institut biologii Komi NTs UrO RAN, 1994, p.313-317, In Russian.

Revegetation, Plant physiology, Plants (botany), Russia—Far North

50-295

What the biological recultivation of sandy quarries on Yamal has shown. [Chto pokazala praktika biologicheskoĭ rekul'tivatsii peschanykh kar'erov na IAmale]

Gromik, V.D., Osvoenie Severa i problema rekul'tivatsii. Doklady II Mezhdunarodnoĭ konferentsii (Syktyvkar, 25-28 aprelia 1994 goda) (Development of the North and the problem of recultivation. Reports from the 2nd International Conference (Syktyvkar, 25-28 April 1994). Edited by S.V. Degteva, Syktyvkar, Institut biologii Komi NTs UrO RAN, 1994, p.318-322, In Russian.

Revegetation, Tundra terrain, Tundra soils, Forest tundra, Grasses, Quarries, Russia—Yamal Peninsula

50-296

Using local peat and stripped rocks from quarries to recultivate lands in the Far North. [Ispol'zovanie mestnykh torfov i vskryshnykh porod kar'erov dlia rekul'tivatsii zemel' Kraĭnego Severa]

Rozhdestvenskiĭ, IU.F., Sarapul'tsev, I.E., Osvoenie Severa i problema rekul'tivatsii. Doklady II Mezhdunarodnoĭ konferentsii (Syktyvkar, 25-28 aprelia 1994 goda) (Development of the North and the problem of recultivation. Reports from the 2nd International Conference (Syktyvkar, 25-28 April 1994). Edited by S.V. Degteva, Syktyvkar, Institut biologii Komi NTs UrO RAN, 1994, p.322-323, In Russian.

Revegetation, Peat, Quarries, Rocks, Russia—Far North

50-297

Concepts and criteria of reestablishing natural systems. [O poniatiiakh i kriteriiakh vosstanovleniia prirodnykh sistem]

Tiurin, V.N., Osvoenie Severa i problema rekul'tivatsii. Doklady II Mezhdunarodnoĭ konferentsii (Syktyvkar, 25-28 aprelia 1994 goda) (Development of the North and the problem of recultivation. Reports from the 2nd International Conference (Syktyvkar, 25-28 April 1994). Edited by S.V. Degteva, Syktyvkar, Institut biologii Komi NTs UrO RAN, 1994, p.324-331, In Russian. 2 refs.

Revegetation, Environmental protection, Environmental impact, Ecosystems

50-298

Biota of the western Siberian Subarctic as an indicator of the ecological-geochemical situation in the region. [Biota zapadno-sibirskoĭ Subarktiki kak indikator ekologo-geokhimicheskoĭ situatsii v regione]

Savchenko, N.V., Osvoenie Severa i problema rekul'tivatsii. Doklady II Mezhdunarodnoĭ konferentsii (Syktyvkar, 25-28 aprelia 1994 goda) (Development of the North and the problem of recultivation. Reports from the 2nd International Conference (Syktyvkar, 25-28 April 1994). Edited by S.V. Degteva, Syktyvkar, Institut biologii Komi NTs UrO RAN, 1994, p.331-338, In Russian.

Ecology, Subarctic landscapes, Geochemistry, Tundra vegetation, Plants (botany), Russia—Siberia

50-299

Experience in biological recultivation of alluvial sandy soils in the Lena River floodplain. [Opyt biologicheskoĭ rekul'tivatsii namyvnykh peschanykh gruntov v poĭme r. Lena]

Poklonnaia, L.V., Osvoenie Severa i problema rekul'tivatsii. Doklady II Mezhdunarodnoĭ konferentsii (Syktyvkar, 25-28 aprelia 1994 goda) (Development of the North and the problem of recultivation. Reports from the 2nd International Conference (Syktyvkar, 25-28 April 1994). Edited by S.V. Degteva, Syktyvkar, Institut biologii Komi NTs UrO RAN, 1994, p.338-346, In Russian. 10 refs.

Revegetation, Alluvium, Sands, Floodplains, Grasses, Substrates, Sapropel, Russia—Lena River

50-300

Controlling recultivated successions. [Upravlenie rekul'tivatsionnoĭ suktsessieĭ]

Teteriuk, B.IU., Osvoenie Severa i problema rekul'tivatsii. Doklady II Mezhdunarodnoĭ konferentsii (Syktyvkar, 25-28 aprelia 1994 goda) (Development of the North and the problem of recultivation. Reports from the 2nd International Conference (Syktyvkar, 25-28 April 1994). Edited by S.V. Degteva, Syktyvkar, Institut biologii Komi NTs UrO RAN, 1994, p.347-351, In Russian.

Revegetation, Substrates, Grasses, Tundra vegetation, Russia—Siberia

50-301

Ecological-hygienic aspects of the development of the Bovanenko gas condensate field in arctic conditions of the Yamal Peninsula. [Ekologo-gigienicheskie aspekty osvoeniia Bovanenkovskogo gazokondensatnogo mestorozhdeniia (GKM) v Arkticheskikh usloviiakh poluostrova IAmal]

Kvashnina, S.I., Osvoenie Severa i problema rekul'tivatsii. Doklady II Mezhdunarodnoĭ konferentsii (Syktyvkar, 25-28 aprelia 1994 goda) (Development of the North and the problem of recultivation. Reports from the 2nd International Conference (Syktyvkar, 25-28 April 1994). Edited by S.V. Degteva, Syktyvkar, Institut biologii Komi NTs UrO RAN, 1994, p.352-359, In Russian.

Ecology, Environmental impact, Natural gas, Cold weather operation, Russia—Yamal Peninsula

50-302

Use of a Geographical Information System in environmental management in Greenland.

Aastrup, P., Osvoenie Severa i problema rekul'tivatsii. Doklady II Mezhdunarodnoĭ konferentsii (Syktyvkar, 25-28 aprelia 1994 goda) (Development of the North and the problem of recultivation. Reports from the 2nd International Conference (Syktyvkar, 25-28 April 1994). Edited by S.V. Degteva, Syktyvkar, Institut biologii Komi NTs UrO RAN, 1994, p.373-374.

Computer applications, Computer programs, Data processing, Environmental impact, Environmental protection, Greenland

50-303

Effects of experimental crude and diesel oil spills in high arctic plant communities in central East Greenland.

Bay, C., Strandberg, B., Osvoenie Severa i problema rekul'tivatsii. Doklady II Mezhdunarodnoĭ konferentsii (Syktyvkar, 25-28 aprelia 1994 goda) (Development of the North and the problem of recultivation. Reports from the 2nd International Conference (Syktyvkar, 25-28 April 1994). Edited by S.V. Degteva, Syktyvkar, Institut biologii Komi NTs UrO RAN, 1994, p.375-376.

Environmental impact, Oil spills, Oil recovery, Plant ecology, Mosses, Greenland

50-304

Geobotanical maps as an aid in assessing surface impacts.

Everett, K.R., Walker, D.A., Osvoenie Severa i problema rekul'tivatsii. Doklady II Mezhdunarodnoĭ konferentsii (Syktyvkar, 25-28 aprelia 1994 goda) (Development of the North and the problem of recultivation. Reports from the 2nd International Conference (Syktyvkar, 25-28 April 1994). Edited by S.V. Degteva, Syktyvkar, Institut biologii Komi NTs UrO RAN, 1994, p.377-385, 17 refs.

Maps, Vegetation patterns, Soil surveys, Microrelief, Hydrocarbons, Environmental impact, Oil spills, Dust, Tundra soils, Tundra vegetation

50-305

Natural recovery and assisted revegetation in dwarf shrub dominated communities in Greenland.

Strandberg, B., Osvoenie Severa i problema rekul'tivatsii. Doklady II Mezhdunarodnoĭ konferentsii (Syktyvkar, 25-28 aprelia 1994 goda) (Development of the North and the problem of recultivation. Reports from the 2nd International Conference (Syktyvkar, 25-28 April 1994). Edited by S.V. Degteva, Syktyvkar, Institut biologii Komi NTs UrO RAN, 1994, p.385-393, 12 refs.

Revegetation, Plants (botany), Grasses, Lichens, Mosses, Biomass, Greenland

50-306

Revegetation trials in Western Siberia: the growth of a cooperative effort.

Younkin, W., Martens, H., Osvoenie Severa i problema rekul'tivatsii. Doklady II Mezhdunarodnoĭ konferentsii (Syktyvkar, 25-28 aprelia 1994 goda) (Development of the North and the problem of recultivation. Reports from the 2nd International Conference (Syktyvkar, 25-28 April 1994). Edited by S.V. Degteva, Syktyvkar, Institut biologii Komi NTs UrO RAN, 1994, p.393-406, 7 refs.

Revegetation, International cooperation, Plants (botany), Russia—Siberia

50-307

Questions in regional and engineering geocryology. [Voprosy regional'noĭ i inzhenernoĭ geokriologii]

Soboleva, I.V., ed, Moscow, Stroĭizdat, 1983, 144p., In Russian. Refs. passim. For individual papers see 50-308 through 50-318.

Engineering geology, Geocryology, Regional planning, Ground ice

50-308

Engineering-geocryological regionalization of Tazov Peninsula. [Inzhenerno-geokriologicheskoe raĭonirovanie Tazovskogo poluostrova]

Belopukhova, E.B., Sukhov, A.G., Chekhovskiĭ, A.L., Dan'ko, V.K., Kuznetsova, I.L., Stremiakov, A.IA., Voprosy regional'noĭ i inzhenernoĭ geokriologii (Questions in regional and engineering geocryology). Edited by I.V. Soboleva, Moscow, Stroĭizdat, 1983, p.3-19, In Russian. 4 refs.

Engineering geology, Geocryology, Tectonics, Taliks, Frozen rock temperature, Microrelief, Russia—Tazov Peninsula

50-309

Questions in engineering-geological mapping of routes of linear structures. [Voprosy inzhenerno-geologicheskogo kartirovaniia trass lineĭnykh sooruzheniĭ]

Demidiuk, L.M., Gorskaia, G.S., Danilova, N.S., Voprosy regional'noĭ i inzhenernoĭ geokriologii (Questions in regional and engineering geocryology). Edited by I.V. Soboleva, Moscow, Stroĭizdat, 1983, p.19-28, In Russian. 3 refs.

Mapping, Engineering geology, Geocryology, Russia—Yamal Peninsula

50-310

Engineering-geocryological conditions of the Neytinsk structure. [Inzhenerno-geokriologicheskie usloviia Neĭtinskoĭ struktury]

Dan'ko, V.K., Ryzhov, V.N., Sobolev, V.V., Voprosy regional'noĭ i inzhenernoĭ geokriologii (Questions in regional and engineering geocryology). Edited by I.V. Soboleva, Moscow, Stroĭizdat, 1983, p.28-38, In Russian.

Engineering geology, Geocryology, Frozen rock temperature, Ground ice, Active layer, Russia—Yamal Peninsula

50-311

Morphological characteristics of large deposits of ground ice in central Yamal. [Morfologicheskie osobennosti krupnykh zalezheĭ podzemnykh l'dov srednego IAmala]

Parmuzin, S.IU., Sukhodol'skiĭ, S.E., Voprosy regional'noĭ i inzhenernoĭ geokriologii (Questions in regional and engineering geocryology). Edited by I.V. Soboleva, Moscow, Stroĭizdat, 1983, p.38-52, In Russian. 4 refs.

Ground ice, Geocryology, Terraces, Ice cover thickness, Russia—Yamal Peninsula

50-312

Geochemical studies of layered ground ice and frozen rocks (from work on Ney-To Lake). [Geokhimicheskie issledovaniia plastovykh l'dov i merzlykh porod (po rabotam na oz. Neĭ-To)]

Dubikov, G.I., Voprosy regional'noĭ i inzhenernoĭ geokriologii (Questions in regional and engineering geocryology). Edited by I.V. Soboleva, Moscow, Stroĭizdat, 1983, p.52-73, In Russian. 8 refs.

Geochemistry, Ground ice, Frozen rocks, Lithology, Pleistocene, Ice strength, Ice composition, Minerals, Russia—Ney-To Lake, Russia—Yamal Peninsula

50-313

Conditions of the occurrence and structure of layered deposits of ground ice in the Ney-To Lake region (Yamal Peninsula). [Usloviia zaleganiia i stroenie plastovykh zalezheĭ podzemnogo l'da raĭona oz. Neĭ-To (p-ov IAmal)]

Koreĭsha, M.M., Khimenkov, A.N., Bryksina, G.S., Voprosy regional'noĭ i inzhenernoĭ geokriologii (Questions in regional and engineering geocryology). Edited by I.V. Soboleva, Moscow, Stroĭizdat, 1983, p.73-88, In Russian. 12 refs.

Ground ice, Ice formation, Marine deposits, Diagenesis, Ice composition, Russia—Ney-To Lake, Russia—Yamal Peninsula

50-314

Salinity of Quaternary deposits in the western Yamal Peninsula. [O zasolennosti chetvertichnykh otlozheniĭ zapadnoĭ chasti poluostrova IAmal]

Lakhtina, O.V., Ryzhov, V.N., Streletskaia, I.D., Stremiakov, A.IA., Voprosy regional'noĭ i inzhenernoĭ geokriologii (Questions in regional and engineering geocryology). Edited by I.V. Soboleva, Moscow, Stroĭizdat, 1983, p.88-101, In Russian. 1 ref.

Salinity, Quaternary deposits, Pleistocene, Marine deposits, Glacial deposits, Ion exchange, Solifluction, Alluvium, Russia—Yamal Peninsula

50-315

Features of using climatic data in calculating rock temperatures in mountainous countries. [Osobennosti ispol'zovaniia klimaticheskikh dannykh pri raschete temperatury porod v gornykh stranakh]

Leĭbman, M.O., Voprosy regional'noĭ i inzhenernoĭ geokriologii (Questions in regional and engineering geocryology). Edited by I.V. Soboleva, Moscow, Stroĭizdat, 1983, p.101-114, In Russian. 3 refs.

Frozen rock temperature, Temperature inversions, Climatic factors, Air temperature, Analysis (mathematics), Baykal Amur railroad

50-316

Geocryological conditions of the eastern Bambuyka basin. [Geokriologicheskie usloviia vostochnoĭ chasti Bambuĭskoĭ vpadiny]

Znamenskiĭ, E.N., Voprosy regional'noĭ i inzhenernoĭ geokriologii (Questions in regional and engineering geocryology). Edited by I.V. Soboleva, Moscow, Stroĭizdat, 1983, p.114-121, In Russian. 2 refs.

Geocryology, Active layer, Cryogenic structures, Permafrost distribution, Russia—Bambuyka

50-317

Method of calculating the sensitivity and instrument accuracy of equipment for temperature measurements in deep boreholes. [K metodike rascheta chuvstvitel'nosti i instrumental'noĭ pogreshnosti apparatury pri temperaturnykh izmereniiakh v glubokikh skvazhinakh]

Pakulin, V.A., Voprosy regional'noĭ i inzhenernoĭ geokriologii (Questions in regional and engineering geocryology). Edited by I.V. Soboleva, Moscow, Stroĭizdat, 1983, p.122-128, In Russian. 1 ref.

Accuracy, Equipment, Temperature measurement, Thermistors, Cold weather operation, Boreholes

50-318

Automated measuring system ASI-500-1 for studying the properties of frozen ground. [Avtomatizirovannaia sistema izmereniĭ ASI-500-1 dlia issledovaniia svoĭstv merzlykh gruntov]

Ivanov, A.I., Pakulin, V.A., Cherniad'ev, V.P., Voprosy regional'noĭ i inzhenernoĭ geokriologii (Questions in regional and engineering geocryology). Edited by I.V. Soboleva, Moscow, Stroĭizdat, 1983, p.129-137, In Russian. 6 refs.

Frozen ground, Engineering geology, Equipment, Thermistors

50-319

Calculating the interaction of processes in the free troposphere and boundary layer in hydrodynamic forecasting for periods of 3 to 10 days. [Uchet vzaimosviazi protsessov v svobodnoĭ troposphere i prizemnom sloe v gidrodinamicheskikh prognozakh na srok ot trekh do desiati dneĭ]

Baranov, G.I., Koshkin, A.G., Chaĭkina, S.A., *St. Petersburg. Arkticheskiĭ i antarkticheskiĭ nauchno-issledovatel'skiĭ institut. Trudy,* 1990, Vol.422, p.6-22, In Russian. 5 refs.

Forecasting, Hydrodynamics, Atmospheric boundary layer, Mathematical models, Polar atmospheres

50-320

Relationship of meridional and latitudinal gradients to the reconstruction characteristic of synoptic processes in groups of small transformations. [Sviaz' meridional'skikh i shirotnykh gradientov s kharakterom perestroek sinopticheskikh protsessov v gruppakh malykh preobrazovaniĭ]

Kuznetsov, A.V., Mozalevskaia, M.V., Sharshun, N.L., *St. Petersburg. Arkticheskiĭ i antarkticheskiĭ nauchno-issledovatel'skiĭ institut. Trudy,* 1990, Vol.422, p.23-30, In Russian. 5 refs.

Air flow, Polar atmospheres, Atmospheric circulation, Synoptic meteorology

50-321

Conditions for the formation of extreme average daily air temperatures in the fall in the Kara Sea. [Ob usloviiakh formirovaniia ekstremal'nykh srednesutochnykh temperatur vozdukha osen'iu v Karskom more]

Korzhikov, A.IA., *St. Petersburg. Arkticheskiĭ i antarkticheskiĭ nauchno-issledovatel'skiĭ institut. Trudy,* 1990, Vol.422, p.31-35, In Russian. 2 refs.

Air temperature, Records (extremes), Polar atmospheres, Russia—Kara Sea

50-322

Statistical characteristics of average daily air temperatures in the western region of the Arctic in transition seasons. [Nekotorye statisticheskie kharakteristiki srednesutochnoĭ temperatury vozdukha v zapadnom raĭone Arktiki v perekhodnye sezony goda]

Grakhovskiĭ, G.N., *St. Petersburg. Arkticheskiĭ i antarkticheskiĭ nauchno-issledovatel'skiĭ institut. Trudy,* 1990, Vol.422, p.36-43, In Russian. 8 refs.

Air temperature, Polar atmospheres, Statistical analysis

50-323

Formation of strong winds in the Arctic in groups of homogeneously developed macroprocesses. [Formirovanie sil'nykh vetrov v Arktike v gruppakh odnorodnogo razvitiia makroprotsessov]

Kuznetsov, A.V., Mozalevskaia, M.V., *St. Petersburg. Arkticheskiĭ i antarkticheskiĭ nauchno-issledovatel'skiĭ institut. Trudy,* 1990, Vol.422, p.44-52, In Russian. 5 refs.

Wind factors, Wind (meteorology), Wind velocity, Polar atmospheres, Storms

50-324

On forecasting extreme average daily air temperatures in the Kara Sea. [K voprosu prognozirovaniia ekstremal'nykh srednesutochnykh temperatur vozdukha v Karskom more]

Korzhikov, A.IA., *St. Petersburg. Arkticheskiĭ i antarkticheskiĭ nauchno-issledovatel'skiĭ institut. Trudy,* 1990, Vol.422, p.53-59, In Russian. 5 refs.

Air temperature, Records (extremes), Polar atmospheres, Forecasting, Statistical analysis, Analysis (mathematics), Russia—Kara Sea

50-325

Characteristics of a sudden drop in average daily air temperatures on a scale of a ten-day period above the western region of the Arctic in transition seasons. [O nekotorye osobennostiakh rezkogo ponizheniia srednesutochnoĭ temperatury vozdukha v masshtabe dekady nad zapadnym raĭonom Arktiki v perekhodnye periody goda]

Grakhovskiĭ, G.N., *St. Petersburg. Arkticheskiĭ i antarkticheskiĭ nauchno-issledovatel'skiĭ institut. Trudy,* 1990, Vol.422, p.60-64, In Russian. 5 refs.

Air temperature, Polar atmospheres, Temperature variations

50-326

General patterns in the transformation of macroprocesses in March-August. [Osnovnye zakonomernosti preobrazovaniia makroprotsessov v marte-avguste]

Bolotinskaia, M.Sh., *St. Petersburg. Arkticheskiĭ i antarkticheskiĭ nauchno-issledovatel'skiĭ institut. Trudy,* 1990, Vol.422, p.65-79, In Russian. 9 refs.

Weather forecasting, Polar atmospheres, Weather, Atmospheric circulation, Temperature variations

50-327

Prognostic relationships for more accurate general meteorological forecasts for December-February. [Prognosticheskie sviazi dlia utochneniia fonovogo meteorologicheskogo prognoza na dekabr'-fevral']

Vangengeĭm, T.G., *St. Petersburg. Arkticheskiĭ i antarkticheskiĭ nauchno-issledovatel'skiĭ institut. Trudy,* 1990, Vol.422, p.80-87, In Russian. 4 refs.

Weather forecasting, Accuracy, Polar atmospheres, Statistical analysis, Atmospheric circulation

50-328

Results of testing of prognostic relationships for more accurate general meteorological forecasts. [Rezul'taty ispytaniia prognosticheskikh sviazeĭ dlia utochneniia fonovogo meteorologicheskogo prognoza]

Bolotinskaia, M.Sh., Vangengeĭm, T.G., Ragozina, V.S., Khudiakova, I.N., *St. Petersburg. Arkticheskiĭ i antarkticheskiĭ nauchno-issledovatel'skiĭ institut. Trudy,* 1990, Vol.422, p.88-92, In Russian. 3 refs.

Air temperature, Temperature variations, Polar atmospheres, Weather forecasting, Accuracy, Atmospheric circulation

50-329

Synoptic-statistical method of forecasting air temperature for November-January in the Arctic and its effectiveness. [Sinoptiko-statisticheskiĭ sposob prognoza temperatury vozdukha na noiabr'-ianvar' dlia Arktiki i ego effektivnost']

Ivanov, V.V., *St. Petersburg. Arkticheskiĭ i antarkticheskiĭ nauchno-issledovatel'skiĭ institut. Trudy,* 1990, Vol.422, p.93-106, In Russian. 6 refs.

Air temperature, Weather forecasting, Statistical analysis, Synoptic meteorology, Polar atmospheres, Atmospheric circulation, Temperature variations

50-330

Verification and effectiveness of a method for long range meteorological forecasting in the fall for Antarctica. [Obespechennost' i effektivnost' metoda dolgosrochnykh meteorologicheskikh prognozov na osen' po Antarktike]

Rabtsevich, S.V., *St. Petersburg. Arkticheskiĭ i antarkticheskiĭ nauchno-issledovatel'skiĭ institut. Trudy,* 1990, Vol.422, p.107-120, In Russian. 4 refs.

Weather forecasting, Air temperature, Atmospheric circulation, Atmospheric pressure, Accuracy, Antarctica

Verification of forecasting atmospheric circulation as well as determining pressure and temperature anomalies are presented. Verification was done on subordinate material from 1957 through 1979, and independent data from 1982 through 1984. Methodical verification of forecasts of pressure and temperature anomaly values throughout the Southern Hemisphere is equal on average, while the effectiveness of test forecasts are in agreement. Verification of forecasts of temperature anomaly values, with an error of ±2°, is near 80% while for pressure anomalies it is ±4-±5 GPa. (Auth. mod.)

50-331

On the effect of solar activity on the recurrence of basic forms of atmospheric circulation. [K voprosu o vliianii solnechnoĭ aktivnosti na povtoriaemost' osnovnykh form atmosfernoĭ tsirkuliatsii]

Bolotinskaia, M.Sh., *St. Petersburg. Arkticheskiĭ i antarkticheskiĭ nauchno-issledovatel'skiĭ institut. Trudy,* 1990, Vol.422, p.121-129, In Russian. 8 refs.

Solar activity, Atmospheric circulation, Polar atmospheres

50-332

Natural orthogonal components of winter anomalies in the surface air temperature field in the Arctic and the possibility of forecasting them. [Estestvennye ortogonal'nye sostavliaiushchie zimnikh anomaliĭ polia prizemnoĭ temperatury vozdukha v Arktike i vozmozhnosti ikh predskazaniia]

Vangengeĭm, T.G., Baranov, G.I., *St. Petersburg. Arkticheskiĭ i antarkticheskiĭ nauchno-issledovatel'skiĭ institut. Trudy,* 1990, Vol.422, p.130-134, In Russian. 3 refs.

Air temperature, Temperature variations, Surface temperature, Forecasting, Polar atmospheres

50-333

Heat content of the baroclinic layer of the ocean as an informative predictor of interannual variability of atmospheric circulation forms. [Teplosoderzhanie baroklinnogo sloia okeana kak odin iz informativnykh prediktorov mezhgodovoĭ izmenchivosti form tsirkuliatsii atmosfery]

Vangengeĭm, T.G., Baranov, G.I., *St. Petersburg. Arkticheskiĭ i antarkticheskiĭ nauchno-issledovatel'skiĭ institut. Trudy,* 1990, Vol.422, p.135-141, In Russian. 16 refs.

Atmospheric circulation, Heat capacity, Water temperature, Forecasting, Statistical analysis

50-334

Character of the inter-annual formation of the air temperature field in the eastern region of the Arctic and its effect on the course of navigation. [Kharakter vnutrigodovogo formirovaniia polia Δ T vozdukha v vostochnoĭ raĭone Arktiki i ego vliianie na khod navigatsii]

Dmitriev, A.A., *St. Petersburg. Arkticheskiĭ i antarkticheskiĭ nauchno-issledovatel'skiĭ institut. Trudy,* 1990, Vol.422, p.142-155, In Russian. 5 refs.

Air temperature, Temperature effects, Navigation, Ice navigation, Temperature distribution, Statistical analysis

50-335

"IUzhak" in Pevek as an integral indicator of the state of the atmosphere and ocean in the eastern region of the Arctic. ["IUzhak" v Peveke kak integral'nyĭ pokazatel' sostoianiia atmosfery i okeana v vostochnom raĭone Arktiki]

Dmitriev, A.A., Filippov, A.L., *St. Petersburg. Arkticheskiĭ i antarkticheskiĭ nauchno-issledovatel'skiĭ institut. Trudy,* 1990, Vol.422, p.156-169, In Russian. 9 refs.

Air water interactions, Atmospheric circulation, Wind (meteorology), Wind factors, Ice navigation, Temperature effects, Wind velocity, Air temperature, Russia—Pevek

50-336

Effect of sea ice on the salinity of antarctic bottom waters.

Toggweiler, J.R., Samuels, B., *Journal of physical oceanography,* Sep. 1995, 25(9), p.1980-1997, Refs. p.1996-1997.

Ice water interface, Brines, Sea ice, Ice formation, Salinity, Models, Oceanography, Antarctica—Weddell Sea, Antarctica—Ross Sea

Brine rejection during the formation of antarctic sea ice is known to enhance the salinity of dense shelf waters in the Weddell and Ross seas. As these shelf waters flow off the shelves and descend to the bottom, they entrain ambient deep water to create new bottom water. It is not uncommon for ocean modelers to modify salinity boundary conditions around Antarctica in an attempt to include a "sea ice effect" in their models. However, the degree to which antarctic salinities are enhanced is usually not quantified or defended. In this paper, studies of shelf hydrography and $\delta^{18}O$ are reviewed to assess the level of salinity enhancement appropriate for ocean general circulation models. The relevant quantities are: the salinity difference between the water masses modified on the shelves and the final offshelf flow, and the flux of salt (or freshwater) that gives rise to this salinity difference. Onshelf/offshelf salinity changes in the Weddell and Ross seas appear to be fairly small, 0.15-0.20 salinity units. The quantity of brine needed to produce this salinification is equivalent to the salt drained from <0.50 m of new sea ice every year. The authors conclude that salt from sea ice is probably not a major influence on the salinity of antarctic bottom waters. (Auth. mod.)

50-337

Movement of eddies of the Antarctic Circumpolar Current at the eastern boundary of the Weddell Gyre, as indicated by satellite altimetry.

Guretskiĭ, V.V., Danilov, A.I., Shtammer, D., *Russian Academy of Sciences. Transactions. Earth science sections,* 1992 (Pub. Sep. 1994), 325A(6), p.228-232, Translated from Rossiĭskaia Akademiia Nauk. Doklady. For Russian original see 49-1369 or J-51654. 10 refs.

Ocean currents, Water temperature, Salinity, Sea ice distribution, Ice water interface, —South Atlantic Ocean

Heat and salt are carried into the antarctic zone of the southern ocean (south of the Antarctic Polar Front) by Circumpolar Water down to 200 to 3000 m depth. Eddy structures generated on the southern periphery of the Antarctic Circumpolar Current are likely to make a major contribution to the development of meridional transport of temperature and salinity characteristics, feeding the Circumpolar Water and affecting the distribution of drifting ice. (Auth. mod.)

50-338

Rapid climate variability in the North Pacific Ocean during the past 95,000 years.

Kotilainen, A.T., Shackleton, N.J., *Nature,* Sep. 28, 1995, 377(6547), p.323-326, 31 refs.

Climatic changes, Ice rafting, Sediments, Ice cores, Detritus, North Pacific Ocean

50-339

Antarctic snow and ice sciences glossary. [Nankyoku seppyogaku yogoshu]

Japanese Society of Snow and Ice. Polar Snow and Ice Branch Committee (Nihon seppyo gakkai Kyokuchi seppyo bunkakai iinkai), Sapporo, Japan, Hokkaido University, Institute of Low Temperature Science, 1982, 38p., Japanese equivalents and definitions of English terms with Japanese-English index. Refs. passim.

Glaciology, Glacier ice, Sea ice, Terminology, Dictionaries

This glossary contains over 300 terms, particularly as applied to antarctic glaciological research, but also some general snow and sea ice terms. The terms are listed alphabetically in English with their Japanese equivalents and definitions. Selected terms cite the source where they were first defined. An index of Japanese terms with their English equivalents is included.

50-340

History of Laurentide meltwater flow to the Gulf of Mexico during the last deglaciation, as revealed by reworked calcareous nannofossils.

Marchitto, T.M., Wei, K.Y., *Geology,* Sep. 1995, 23(9), p.779-782, 30 refs.

Pleistocene, Paleoclimatology, Ice sheets, Glacier melting, Meltwater, Runoff, Geochronology, Marine geology, Quaternary deposits, Marine deposits, Fossils, Isotope analysis, Mexico, Gulf

50-341

Observation of snowfall and airflow over a low mountain barrier.

Nakai, S., Endoh, T., *Meteorological Society of Japan. Journal,* Apr. 1995, 73(2), p.183-199, With Japanese summary. 29 refs.

Precipitation (meteorology), Fronts (meteorology), Snowfall, Air flow, Cloud physics, Atmospheric boundary layer, Stratification, Radar echoes, Wind factors, Topographic effects

50-342

Statistical study of the snowfall distribution on the Japan Sea side of Hokkaido and its relation to synoptic-scale and meso-scale environments.

Tachibana, Y., *Meteorological Society of Japan. Journal,* June 1995, 73(3), p.697-715, With Japanese summary. 25 refs.

Precipitation (meteorology), Synoptic meteorology, Snowfall, Air masses, Distribution, Statistical analysis, Classifications, Snow air interface, Turbulent boundary layer, Wind factors, Japan—Hokkaido

50-343

Model of protecting the geological environment in the permafrost region.

Kagan, A.A., *Hydrotechnical construction,* Jan. 1995, 29(1), p.1-9, Translated from Gidrotekhnicheskoe stroitel'stvo. 7 refs.

Environmental protection, Geocryology, Reservoirs, Permafrost preservation, Engineering geology, Bank protection (waterways), Hydraulic structures, Ice solid interface

50-344

Estimation of reliability of permafrost beds.

Gerasimov, A.S., *Soil mechanics and foundation engineering,* May 1995, 31(6), p.187-191, Translated from Osnovaniia, fundamenty i mekhanika gruntov. 10 refs.

Permafrost beneath structures, Bearing strength, Design criteria, Deformation, Settlement (structural), Permafrost bases, Geocryology, Safety, Analysis (mathematics), Statistical analysis

50-345

Prediction of permafrost temperature in bed of structure from field data.

Khrustalev, L.N., Pustovoit, G.P., Emel'ianova, L.V., *Soil mechanics and foundation engineering,* May 1995, 31(6), p.200-204, Translated from Osnovaniia, fundamenty i mekhanika gruntov. 4 refs.

Frozen ground temperature, Geocryology, Permafrost heat balance, Permafrost heat transfer, Permafrost beneath structures, Temperature variations, Forecasting, Mathematical models, Design criteria, Correlation

50-346

Definition of the polar vortex edge by lidar data of the stratosphere aerosol: a comparison with values of potential vorticity.

Dameris, M., Wirth, M., Renger, W., Grewe, V., *Contributions to atmospheric physics,* May 1995, 68(2), p.113-119, With German summary. 16 refs.

Polar atmospheres, Atmospheric physics, Atmospheric boundary layer, Stratosphere, Aerosols, Aerial surveys, Lidar

50-347

How the transport and dispersion of AgI aerosols may affect detectability of seeding effects by statistical methods.

Warburton, J.A., Stone, R.H., III, Marler, B.L., *Journal of applied meteorology,* Sep. 1995, 34(9), p.1929-1941, 27 refs.

Cloud physics, Weather modification, Precipitation (meteorology), Cloud seeding, Detection, Snowfall, Sampling, Aerosols, Silver iodide, Turbulent flow, Snow air interface, Statistical analysis, Accuracy

50-348

Cloud condensation nuclei over the Arctic Ocean in early spring.

Hegg, D.A., Ferek, R.J., Hobbs, P.V., *Journal of applied meteorology,* Sep. 1995, 34(9), p.2076-2082, 34 refs.

Polar atmospheres, Marine atmospheres, Climatology, Cloud physics, Cloud cover, Microstructure, Condensation nuclei, Aerosols, Air pollution, Sampling, Particle size distribution, Spectra, Arctic Ocean

50-349

Retrieval of thin ice thickness from multifrequency polarimetric SAR data.

Kwok, R., Nghiem, S.V., Yueh, S.H., Huynh, D.D., *Remote sensing of environment,* Mar. 1995, 51(3), p.361-374, 31 refs.

Sea ice distribution, Ice cover thickness, Classifications, Ice surveys, Remote sensing, Ice openings, Synthetic aperture radar, Radar photography, Image processing, Scattering, Polarization (waves), Models

50-350

Forecasting the impacts of strong wintertime post-cold front winds in the northern plains.

Kapela, A.F., Leftwich, P.W., Van Ess, R., *Weather and forecasting,* June 1995, 10(2), p.229-244, 17 refs.

Weather forecasting, Snowstorms, Atmospheric pressure, Atmospheric physics, Fronts (meteorology), Turbulent boundary layer, Wind factors, Classifications

50-351

Calculation of the strength of the ice cover during breakup of rivers.

Ginzburg, B.M., Poliakova, K.N., *Hydrotechnical construction,* May 1995, 28(11), p.642-647, Translated from Gidrotekhnicheskoe stroitel'stvo. 11 refs.

River ice, Ice breakup, Ice cover strength, Forecasting, Ice water interface, Statistical analysis, Design criteria

50-352

Three-layer model of flow under the ice cover in rivers.

Debol'skii, V.K., Dolgopolova, E.N., Neimark, R.V., *Hydrotechnical construction,* May 1995, 28(11), p.648-656, Translated from Gidrotekhnicheskoe stroitel'stvo. 15 refs.

River ice, Ice water interface, River flow, Fluid dynamics, Stratification, Velocity measurement, Subglacial observations, Ice cover effect, Mathematical models, Simulation

50-353

Consistent treatment of the evaporation of rain and snow for use in large-scale models.

Gregory, D., *Monthly weather review,* Sep. 1995, 123(9), p.2716-2732, 35 refs.

Precipitation (meteorology), Weather forecasting, Cloud physics, Convection, Mathematical models, Snowfall, Snow evaporation, Ice sublimation, Simulation, Ice vapor interface

50-354

Hudson Bay-Hudson Strait jökulhlaups and Heinrich events: a hypothesis.

Johnson, R.G., Lauritzen, S.E., *Palaeogeography, palaeoclimatology, palaeoecology,* Aug. 1995, 117(1-2), p.123-137, 68 refs.

Paleoclimatology, Climatic changes, Cooling, Glacier oscillation, Ice rafting, Bottom sediment, Glacier surges, Glacial lakes, Ice dams, Lake bursts, Models, Canada—Hudson Bay

50-355

Numerical simulation of river ice processes.

Shen, H.T., Wang, D.S., Lal, A.M.W., *Journal of cold regions engineering,* Sep. 1995, 9(3), p.107-118, 26 refs.

River ice, Channels (waterways), Ice formation, Ice cover thickness, Ice water interface, Subglacial observations, Underwater ice, Supercooling, Drift, Bottom ice, Simulation, Mathematical models, Ice forecasting

50-356

Simulation and analysis of upper Niagara River ice-jam conditions.

Wang, D.S., Shen, H.T., Crissman, R.D., *Journal of cold regions engineering,* Sep. 1995, 9(3), p.119-133, 14 refs.

River ice, Ice formation, Ice jams, Ice water interface, River flow, Water level, Water temperature, Channels (waterways), Air ice water interaction, Wind factors, Simulation, Mathematical models

50-357

Freeze-thaw dewatering and structural enhancement of fine coal tails.

Stahl, R.P., Sego, D.C., *Journal of cold regions engineering,* Sep. 1995, 9(3), p.135-151, 25 refs.

Mining, Coal, Tailings, Land reclamation, Soil freezing, Frozen ground mechanics, Ice water interface, Moisture transfer, Freeze thaw cycles, Soil stabilization, Soil strength, Shear strength

50-358

Reinforcement percentage effects on bending strength of soil-ice mixtures.

Nixon, W.A., Weber, L.J., *Journal of cold regions engineering,* Sep. 1995, 9(3), p.152-163, 20 refs.

Cold weather construction, Frozen ground strength, Frozen ground mechanics, Ice composition, Ice solid interface, Ice (construction material), Ice strength, Tensile properties, Mechanical tests, Alluvium, Loads (forces), Mathematical models

50-359

Microwave thawing of frozen soils and gravels.

Lindroth, D.P., Berglund, W.R., Wingquist, C.F., *Journal of cold regions engineering,* June 1995, 9(2), p.53-63, 14 refs.

Ground thawing, Frozen ground temperature, Thaw weakening, Artificial thawing, Microwaves, Soil tests, Thawing rate

50-360

Comparison of methods used to create estimate of air-freezing index.

Steurer, P.M., Crandell, J.H., *Journal of cold regions engineering,* June 1995, 9(2), p.64-74, 14 refs.

Climatology, Air temperature, Seasonal variations, Temperature measurement, Freezing indexes, Correlation, Accuracy, Soil freezing, Soil air interface, Frost forecasting

50-361

Potential for greater use of wetlands for waste treatment in northern Canada.

Doku, I.A., Heinke, G.W., *Journal of cold regions engineering,* June 1995, 9(2), p.75-88, 22 refs.

Wetlands, Waste treatment, Water treatment, Sewage disposal, Environmental impact, Design criteria, Municipal engineering, Soil microbiology, Cold weather performance, Canada—Northwest Territories

50-362

Ice jamming in upper Niagara River: processes and plan of study.

Crissman, R.D., Ettema, R., Andres, D.D., Carson, R., *Journal of cold regions engineering,* June 1995, 9(2), p.89-104, 4 refs.

River ice, Ice jams, Ice mechanics, Countermeasures, Electric power, Water intakes, Ice control, Water flow, Flow control, Ice models, United States—New York—Niagara River

50-363

Ultraviolet (A) and short-wave radiation on the Juneau Icefield, Alaska.

Quakenbush, T., Wendler, G., *Polarforschung,* 1992, 62(2-3), p.77-82, With German summary. 23 refs.

Solar radiation, Ultraviolet radiation, Glacier ice, Radiation absorption, Reflectivity, Radiance, Snow optics, Photometry, United States—Alaska—Juneau

50-364

Sandar formation and glacier drainage of Kötlujökull (Höfdabrekkujökull), southern Iceland. [Sandergenese und Gletscherentwässerung am Kötlujökull (Höfdabrekkujökull), Südisland]

Heim, D., *Polarforschung,* 1992, 62(2-3), p.95-128, In German with English summary. 77 refs.

Glacial hydrology, Subglacial drainage, Sediment transport, Outwash, Glacial deposits, Meltwater, Geomorphology, Iceland

50-365

Lagrangian transport calculations using UARS data. Part II: ozone.

Manney, G.L., Zurek, R.W., Froidevaux, L., Waters, J.W., O'Neill, A., Swinbank, R., *Journal of the atmospheric sciences,* Sep. 1, 1995, 52(17), p.3069-3081, 22 refs.

Polar atmospheres, Climatology, Stratosphere, Atmospheric attenuation, Spectroscopy, Remote sensing, Spectra, Ozone, Air flow

Trajectory calculations are used to examine ozone transport in the polar winter stratosphere during periods of the Upper Atmosphere Research Satellite (UARS) observations. The value of these calculations for determining mass transport was demonstrated previously using UARS observations of long-lived tracers. In the middle stratosphere, the overall ozone behavior observed by the Microwave Limb Sounder in the polar vortex is reproduced by this purely dynamical model. Calculations show the evolution of ozone in the lower stratosphere during early winter to be dominated by dynamics in Dec. 1992 in the Arctic. Calculations for June 1992 in the Antarctic show evidence of chemical ozone destruction and indicate that ca. 50% of the chemical destruction may be masked by dynamical effects, mainly diabatic descent, which bring higher ozone into the lower-stratospheric vortex. Estimating differences between calculated and observed fields suggests that dynamical changes masked ca. 20-35% of chemical ozone loss during late Feb. and early Mar. 1993 in the Arctic. (Auth. mod.)

50-366

Bloom of *Mallomonas acaroides*, a silica-scaled chrysophyte, in the crater pond of a pingo, northwest Greenland.

Kristiansen, J., Wilken, L.R., Jürgensen, T., *Polar biology,* May 1995, 15(5), p.319-324, 16 refs.

Ecosystems, Limnology, Ponds, Pingos, Plankton, Growth, Distribution, Sampling, Greenland—Svartenhuk

50-367

Microstructural features of freeze-thaw deterioration of concrete.

Bakharev, T., Struble, L.J., Materials Research Society symposium proceedings, Vol.370, Boston, MA, Nov. 28-Dec. 1, 1994. Microstructure of cement-based systems/bonding and interfaces in cementitious materials, Pittsburgh, PA, Materials Research Society (MRS), 1995, p.83-88, 6 refs.

DLC TA435.M47 1995

Concrete freezing, Concrete strength, Freeze thaw tests, Frost action, Microstructure, Crack propagation

50-368

Microstructure-electrical property relationships in cement-based materials.

Olson, R.A., et al, Materials Research Society symposium proceedings, Vol.370, Boston, MA, Nov. 28-Dec. 1, 1994. Microstructure of cement-based systems/bonding and interfaces in cementitious materials, Pittsburgh, PA, Materials Research Society (MRS), 1995, p.255-264, 20 refs.

DLC TA435.M47 1995

Cements, Concrete freezing, Electrical resistivity, Dielectric properties

50-369

***Exxon Valdez* Oil Spill Restoration Plan. Final environmental impact statement.**

Exxon Valdez Oil Spill Trustee Council, Anchorage, AK, Anchorage, AK, Sep. 1994, Var. p., PB95-966001, Bibliography 14p.

Oil spills, Oil recovery, Tanker ships, Accidents, Water pollution, Environmental impact, Environmental protection, Land reclamation, Regional planning, United States—Alaska—Prince William Sound

50-370

Study of Alaskan snow loads.

Stember, J.A., Anchorage, University of Alaska, 1994, 104p., University Microfilms order No.DA1360574, M.S. thesis. 35 refs.

Snow loads, Snow depth, Snowdrifts, Snow density, Snow water equivalent, Roofs, Building codes, Design criteria, Cold weather construction, United States—Alaska

50-371

Performance of landfill cover systems in cold climates.

Lee, J.Y., Detroit, Wayne State University, 1994, 167p., University Microfilms order No.DA9519915, Ph.D. thesis. 72 refs.

Waste disposal, Earth fills, Soil freezing, Frozen ground strength, Frost penetration, Frost resistance, Frost protection, Freeze thaw tests, Clay soils, Soil compaction, Geotextiles

50-372

Deposition of semivolatile organic chemicals by snow.

Franz, T.P., Jr., Minneapolis, University of Minnesota, 1994, 343p., University Microfilms order No.DA9517353, Ph.D. thesis. Refs. passim.

Air pollution, Atmospheric composition, Scavenging, Snowfall, Snow air interface, Snow composition, Snow cover effect, Snowmelt, Seepage, Soil pollution, Superior, Lake

50-373

Heat and dissolved oxygen transport processes in ice-covered lakes and the development of ice-preserving lake aeration.

Ellis, C.R., Minneapolis, University of Minnesota, 1994, 175p., University Microfilms order No.DA9512693, Ph.D. thesis. Refs. passim.

Frozen lakes, Lake ice, Ice cover effect, Ice water interface, Ice heat flux, Lake water, Water chemistry, Limnology, Aeration

50-374

Frost resistance of concrete with and without silica fume, and the effects of external loads.

Zhou, Y.X., Lafayette, IN, Purdue University, 1994, 224p., University Microfilms order No.DA9501803, Ph.D. thesis. 92 refs.

Concrete freezing, Concrete strength, Concrete durability, Concrete admixtures, Air entrainment, Frost resistance, Frost protection, Freeze thaw tests

50-375

Modelling interannual sea ice variability in the Gulf of St. Lawrence.

DeTracey, B., Montreal, McGill University, 1993, 108p., M.S. thesis. With French summary. 52 refs.

Ice surveys, Sea ice distribution, Ice cover thickness, Ice growth, Ice edge, Air ice water interaction, Ice forecasting, Ice models, Mathematical models, Canada—Saint Lawrence, Gulf

50-376

Variation of local pressures during ice-structure interaction.

Johnston, M., St. John's, Memorial University of Newfoundland, 1994, 209p., M.Eng. thesis. 62 refs.

Ice solid interface, Ice loads, Ice pressure, Ice cover strength, Ice deformation, Ice breaking, Ice islands, Offshore structures, Icebreakers, Stress concentration

50-377

Effects of ice on the hydraulics of the Mackenzie River at the outlet of Great Slave Lake, NWT.

Chen, X.B., Edmonton,, University of Alberta, 1993, 173p., M.S. thesis. 40 refs.

Lake ice, River ice, Ice cover effect, Ice cover thickness, Ice bottom surface, Ice water interface, River flow, Hydraulics, Canada—Northwest Territories—Mackenzie River, Canada—Northwest Territories—Great Slave Lake

50-378

Optimal design of bow plating for ships operating in ice.

Brown, P.W., St. John's, Memorial University of Newfoundland, 1993, 154p., M.Eng. thesis. 46 refs.

Ships, Ice navigation, Ice solid interface, Ice loads, Ice pressure, Metal ice friction, Cost analysis

50-379

Variations of Upsala Glacier in southern Patagonia since the late Holocene to the present.

Malagnino, E., Strelin, J., Glaciological researches in Patagonia, 1990. Edited by R. Naruse and M. Aniya, Sapporo, Japan, Hokkaido University, Institute of Low Temperature Science, 1992, p.61-85, With Spanish summary. 6 refs.

DLC GB2466.P38G48 1992

Glacier surveys, Alpine glaciation, Glacier oscillation, Glacial geology, Glacial deposits, Moraines, Geochronology, Paleoclimatology, Patagonia

50-380

Distribution of moraines and ice-scoured topographies on the eastern side of Tyndall Glacier, southern Patagonia.

Yamada, S., Glaciological researches in Patagonia, 1990. Edited by R. Naruse and M. Aniya, Sapporo, Japan, Hokkaido University, Institute of Low Temperature Science, 1992, p.87-94, 10 refs.

DLC GB2466.P38G48 1992

Glacier surveys, Alpine glaciation, Glacier oscillation, Glacial geology, Glacial erosion, Moraines, Patagonia

50-381

Statistical analysis of precipitation and air temperature in the southern Patagonia icefield.

Peña, H., Gutiérrez, R, Glaciological researches in Patagonia, 1990. Edited by R. Naruse and M. Aniya, Sapporo, Japan, Hokkaido University, Institute of Low Temperature Science, 1992, p.95-107, With Spanish summary. 9 refs.

DLC GB2466.P38G48 1992

Glacier surveys, Glacier oscillation, Glacier mass balance, Glacial meteorology, Precipitation (meteorology), Air temperature, Statistical analysis, Patagonia

50-382

Water balance in the Patagonia icefield.

Escobar, F., Vidal, F., Garin, C., Naruse, R., Glaciological researches in Patagonia, 1990. Edited by R. Naruse and M. Aniya, Sapporo, Japan, Hokkaido University, Institute of Low Temperature Science, 1992, p.109-119, With Spanish summary. 11 refs.

DLC GB2466.P38G48 1992

Glacier surveys, Glacier oscillation, Glacier mass balance, Glacial hydrology, Glacial meteorology, Water balance, Patagonia

50-383

Geography and economy. Volume 5: Ecology of the Baltic region (collected scientific papers). [Geografiia i khoziaĭstvo. Vypusk 5: Ekologiia Baltiĭskogo regiona (sbornik nauchnykh trudov)]
Gladkiĭ, IU.N., ed, Grigor'ev, A.A., ed, Chistobaev, A.I., ed, St. Petersburg, Russkoe geograficheskoe obshchestvo, 1992, 171p., In Russian. For selected papers see 50-384 through 50-386.
Environmental impact, Environmental protection, Pollution

50-384

Characteristics of the spatial variability in the pollution of snow cover (according to data from the eastern part of the Gulf of Finland basin). [Osobennosti prostranstvennoĭ izmenchivosti zagriazneniia snezhnogo pokrova (po dannym vodosbora vostochnoĭ chasti Finskogo zaliva)]
Adamenko, V.N., IUrchenko, IU.A., Chekhin, L.P., Kuznetsov, V.K., Geografiia i khoziaĭstvo. Vypusk 5: Ekologiia Baltiĭskogo regiona (sbornik nauchnykh trudov) (Geography and economy. Volume 5: Ecology of the Baltic region (collected scientific papers)). Edited by IU.N. Gladkiĭ, Al.A. Grigor'ev and A.I. Chistobaev, St. Petersburg, Russkoe geograficheskoe obshchestvo, 1992, p.61-71, In Russian.
Snow cover, Snow impurities, River basins, Snow water content, Pollution, Finland, Gulf, Russia—Neva River

50-385

Analysis of the ecological status in the Ladoga Lake basin. [Otsenka ekologicheskoĭ situatsii v basseĭne Ladozhskogo ozera]
Rumiantsev, V.A., Voropaeva, G.M., Geografiia i khoziaĭstvo. Vypusk 5: Ekologiia Baltiĭskogo regiona (sbornik nauchnykh trudov) (Geography and economy. Volume 5: Ecology of the Baltic region (collected scientific papers)). Edited by IU.N. Gladkiĭ, Al.A. Grigor'ev and A.I. Chistobaev, St. Petersburg, Russkoe geograficheskoe obshchestvo, 1992, p.72-83, In Russian. 3 refs.
Ecology, Water pollution, Environmental impact, Air pollution, Soil pollution, Russia—Ladoga Lake

50-386

Role of geomorphological analysis as a basis for environmental protection measures in coastal zones. [Rol' geomorfologicheskogo analiza v obosnovanii prirodookhrannykh meropriiatiĭ v beregovoĭ zone moreĭ]
Finarov, D.P., Belov, D.M., Geografiia i khoziaĭstvo. Vypusk 5: Ekologiia Baltiĭskogo regiona (sbornik nauchnykh trudov) (Geography and economy. Volume 5: Ecology of the Baltic region (collected scientific papers)). Edited by IU.N. Gladkiĭ, Al.A. Grigor'ev and A.I. Chistobaev, St. Petersburg, Russkoe geograficheskoe obshchestvo, 1992, p.141-151, In Russian. 19 refs.
Geomorphology, Environmental protection, Glacial deposits, Shores, Finland, Gulf

50-387

Icebreakers. [Ledokoly]
Kashtelian, V.I., Ryvlin, A.IA., Faddeev, O.V., IAgodkin, V.IA., Leningrad, Sudostroenie, 1972, 285p., In Russian. 44 refs.
Icebreakers, Ships, Design, Ice navigation

50-388

Testing of ships in ice. [Ispytaniia sudov vo l'dakh]
Ryvlin, A.IA., Kheĭsin, D.E., Leningrad, Sudostroenie, 1980, 206p., In Russian. 106 refs.
Ships, Ice navigation, Icebreakers, Ice solid interface, Tests, Mechanical tests, Ice cover effect

50-389

Guidelines for managing vegetation on earth-covered magazines within the U.S. Army Materiel Command.
Palazzo, A.J., Gatto, L.W., Woodson, W., CR 94-06, *U.S. Army Cold Regions Research and Engineering Laboratory. Report*, May 1995, 43p., ADA-284 275, Refs. p.23-25.
Revegetation, Military operation, Cost analysis

The purpose of these guidelines is to assist land managers in establishing and maintaining vegetation on earth-covered magazines (ECMs) in a safe, efficient and cost-effective manner. Although the vegetation management procedures discussed here are intended primarily for conventional storage ECMs, not those used for special weapons, many of the general procedures and principles presented apply to both types. In humid areas a healthy vegetative cover on ECMs is the primary factor in maintaining the stable soil cover that is required to meet safety standards. Thus, a vegetation management planning process is presented that assists land managers in defining management goals, assessing climatic and soil factors and evaluating vegetation options. Specific methods and procedures that have proven successful for maintaining and re-establishing an effective vegetation cover are outlined. Other methods used to stablize the ECM soil cover in dry climates, where cost-effective maintenance of vegetation can be difficult to impossible, are briefly discussed as well.

50-390

Structure of ordinary ice I_h. Part II: Defects in ice. Volume 2: Dislocations and plane defects.
Petrenko, V.F., Whitworth, R.W., SR 94-12, *U.S. Army Cold Regions Research and Engineering Laboratory. Special report*, May 1994, 24p., ADA-282 628, Refs. p.21-24. For part II, vol.1 see 48-5147.
Ice physics, Defects, Molecular structure, Plastic deformation, Dislocations (materials), Doped ice, Ice structure

This report examines linear and planar defects in ice: dislocations, grain boundaries and stacking faults. The authors review experimental results and theoretical models on the defects' atomic structures and physical properties. In addition, experimental techniques used for direct observation of defects, experimental results and theoretical interpretation of dislocation mobility and the role of dislocaions in plastic deformation are considered.

50-391

Winter tests of artillery firing into Eagle River Flats, Fort Richardson, Alaska.
Collins, C.M., Calkins, D.J., SR 95-02, *U.S. Army Cold Regions Research and Engineering Laboratory. Special report*, Jan. 1995, 14p., ADA-298 512, 13 refs.
Environmental impact, Military operation, Explosives, Explosion effects, Ice cover effect, Impact tests

Winter tests of artillery firing were conducted in the Eagle River Flats impact range to determine the physical effects of exploding high-explosive (HE) projectiles on the ice-covered terrain. Eagle River Flats is an estuary at the mouth of the Eagle River used as the artillery impact range for Ft. Richardson. The Army suspended use of the impact range following the discovery that white phosphorus (WP) deposited in the salt marsh was responsible for large numbers of waterfowl deaths each summer. The purpose of these tests was to assess if seasonal firing of HE projectiles from 60- and 81-mm mortars and 105-mm howitzers into Eagle River Flats could be resumed without significantly disturbing the sediments contaminated with WP. The results of the test firings indicated that a minimum of 25 cm of ice over frozen sediment or a minimum of 30 cm of floating ice over shallow water was required to prevent disturbance of the WP-contaminated sediment by exploding 105-mm howitzer projectiles. Only 10 cm of ice was required to prevent disturbance by exploding 60- and 81-mm mortar projectiles.

50-392

Initial analyses of Eagle River Flats hydrology and sedimentology, Fort Richardson, Alaska.
Lawson, D.E., Bigl, S.R., Bodette, J.H., Weyrick, P., CR 95-05, *U.S. Army Cold Regions Research and Engineering Laboratory. Report*, Mar. 1995, 38p., ADA-298 690, Refs. p.34-36.
Hydrology, Sedimentation, Environmental impact, Military operation, Swamps, Sediment transport, Runoff, United States—Alaska—Eagle River Flats

The physical environment of Eagle River Flats (ERF), a subarctic tidal flat and salt marsh, is progressively changing because of the interactions of multiple physical processes, including a high tidal range, two primary sediment sources, cold climate and location within an active earthquake zone. In addition, ERF has been used by the U.S. Army as an artillery range, where high explosives or smoke-producing shells have been detonated, causing cratering and disrupting drainage. The physical environment of ERF needs to be understood to help remediate a problem of unusually high mortality rates in migrating waterfowl. This high mortality of ducks is attributable to ingestion of elemental white phosphorus (P_4) particles (from smoke-producing devices), which are now distributed within near-surface sediments of the ponds and marshes. The complexity of this dynamic environment makes it extremely difficult to predict what physical effects remedial measures for the P_4 contamination will have and, conversely, what short- and long-term effects the physical system will have on the effectiveness and success of proposed remedies. Understanding both the system's response and the effects of remedial technologies is critical to deciding what measures are used. This report presents the initial analysis of the physical processes of erosion, sedimentation and sediment transport and the factors controlling their activity within a portion of ERF.

50-393

Structural ice control: review of existing methods.
Tuthill, A.M., SR 95-18, *U.S. Army Cold Regions Research and Engineering Laboratory. Special report,* July 1995, 31p., ADA-298 605, Refs. p.24-26.

Ice jams, River ice, Ice control, Countermeasures, Ice breakup, Ice booms, Ice dams, Structures, Piers, Ice solid interface

This report is a comprehensive review of structural ice control methods in worldwide use today. The structures are grouped according to the purpose of the ice control. Categories are sheet ice retention, breakup ice control and ice diversion. The focus is on the recent performance of the structures. Innovative solutions that could be applied to river confluence ice problems also receive special attention. The report reviews the state of the art in structural ice control, addressing the ranges as well as the limits of application of methods in use today.

50-394

Roof blisters: cause and cure.
Korhonen, C.J., Charest, B., SR 95-19, *U.S. Army Cold Regions Research and Engineering Laboratory. Special report,* July 1995, 10p., ADA-298 686, 5 refs.

Roofs, Winter maintenance, Ventilation, Countermeasures

Blisters are a major problem of built-up roof membranes. They are caused by voids built into the roof during construction. They develop into the characteristic dome-shaped humps by a breathing action driven by thermal cycling. A small pressure relief vent was patented by CRREL as a cost-effective way to repair blisters. Though these vents cannot prevent blisters from forming, they can lengthen a roof's service life by repairing the blisters before they break. Two demonstration projects were conducted to transfer the blister vent technology to the military community. Most participants in the demonstration projects found the vent easy to use and that it performed as designed. The main objection to the vent was its price.

50-395

Northern Sea Route reconnaissance study: a summary of icebreaking technology.
Sodhi, D.S., SR 95-17, *U.S. Army Cold Regions Research and Engineering Laboratory. Special report,* June 1995, 236p., 39 refs. For another source see 49-5678.

Icebreakers, Ships, Design, Design criteria, Propellers, Ice navigation, Ports, Northern Sea Route, Russia

50-396

2.5kWe dynamic isotope power system for the space exploration initiative including an antarctic demonstration.
Hunt, M.E., Rovang, R.D., Space Nuclear Power Systems, 9th Symposium, Albuquerque, NM. Proceedings. Edited by M.S. El-Genk and M.D. Hoover, New York, American Institute of Physics, 1992, p.222-227, 4 refs.

DLC TL1102.N8 S95a pt.1 1992

Nuclear power, Fuels, Antarctica

The current focus of the Dynamic Isotope Power Systems (DIPS) Demonstration Program is a standardized 2.5-kWe portable generator for multiple applications on the Lunar or Martian surface. A variety of potential remote and mobile applications have been identified by the National Aeronautics and Space Administration (NASA). Included among these are surface rovers for both short and extended duration missions, remote power to science packages, and backup to central base power. Several power levels were investigated to determine the optimum level for the identified applications. Recent work has focused on refining the 2.5-kWe design to assure compatibility with the Martian environment while imposing only a minor mass penalty on Lunar operations. A plan and cycle schematic were generated for an early demonstration of a prototypic isotope-powered Brayton system using the Antarctic as the test bed. The plan includes a schedule and cost and a determination of the impact of such a program on the qualification of a DIPS.

50-397

To the sixth continent: the Second German South Polar Expedition.
Filchner, W., Huntingdon and Norfolk, UK, Bluntisham Books and Erskine Press, 1994, 253p., Translation, introductory matter, and editing by W. Barr. 64 refs.

DLC G850 1911.D48F5513 1994

Expeditions, History, Antarctica—Weddell Sea

This is a translation of the report Filchner prepared following the 1912 German expedition to the Weddell Sea. Due to the intervention of World War I, the report was not published until 1922, in Berlin. From a scientific viewpoint, the expedition is regarded as a success because of the wealth of observations that was compiled in a number of scientific and technical areas. From the personnel aspect, however, the rancor that developed between Filchner and Richard Vahsel, the first Captain of the Expedition ship *Deutschland,* led to the rise of two bitterly opposing factions, each blaming the other for the multiple problems which beset the Expedition. The translator provides a brief history of the exploration of Antarctica and sets this Expedition in relation to the endeavors of Amundsen and Scott, concurrently under way in the Ross Sea region. Additionally there is included a compact, comprehensive biography of Filchner covering his early life and training and recounting his activities after the Expedition.

50-398

***Exxon Valdez* Oil Spill Restoration Plan.**

Exxon Valdez Oil Spill Trustee Council, Anchorage, AK, Anchorage, AK, Nov. 1994, 56p. + appends., PB95-966002.

Oil spills, Oil recovery, Tanker ships, Accidents, Water pollution, Environmental impact, Environmental protection, Cost analysis, Regional planning, United States—Alaska—Prince William Sound

50-399

Ice and construction.

Makkonen, L., ed, International Union of Testing and Research Laboratories for Materials and Structures (Réunion Internationale des Laboratoires d'Essais et de Recherches sur les Matéraux Constructions). RILEM report No.13, London, E & FN Spon, 1994, 97p., Refs. passim.

Ice (construction material), Ice strength, Artificial ice, Artificial freezing, Ice accretion, Ice friction, Ice loads

50-400

Phase composition and grain size analysis of core samples: Beaufort (1990) and Cross-Delta (1992) transects.

Patterson, D.E., Ottawa, Carleton University, Geotechnical Science Laboratories, Apr. 1994, 15p. + appends., IR-66, 3 refs.

Permafrost surveys, Permafrost beneath rivers, Subsea permafrost, Bottom sediment, Frozen ground temperature, Unfrozen water content, Grain size, Canada—Northwest Territories—Mackenzie Delta

50-401

Geologic and geotechnical conditions adjacent to the Turnagain Heights landslide, Anchorage, Alaska.

Updike, R.G., Olsen, H.W., Schmoll, H.R., Kharaka, Y.K., Stokoe, K.H., II, *U.S. Geological Survey. Bulletin,* 1988, No.1817, 40p. + maps, 63 refs.

Earthquakes, Landslides, Slope stability, Soil strength, Soil surveys, Geological surveys, Engineering geology, United States—Alaska—Anchorage

50-402

Slushflow in Rana. Development of criteria for evaluation and warning of slushflow hazards. Instrumentation, field program and preliminary experience from the research project in Rana. [Sørpeskred, Rana. Utvikling av kriterier for vurdering og varsling av faren for sørpeskred. Instrumentering, feltprogram og foreløpige erfaringer fra forskningsprosjekt i Rana]

Hestnes, E., Bakkehøi, S., *Norges Geotekniske Institutt (Norwegian Geotechnical Institute). NGI rapport,* Jan. 1993, No.582000-8, 38p., In Norwegian. 3 refs.

Avalanche formation, Avalanche forecasting, Snow cover stability, Slush, Norway

50-403

Weather and snowpack conditions essential to slushflow release and downslope propagation.

Hestnes, E., Bakkehøi, S., Sandersen, F., Andresen, L., *Norges Geotekniske Institutt (Norwegian Geotechnical Institute). NGI rapport,* Nov. 1994, No.582000-9, 18p., 8 refs.

Avalanche formation, Avalanche forecasting, Snow cover stability, Snowmelt, Snow hydrology, Slush, Meteorological factors, Norway

50-404

Prediction of slushflow hazard—objectives and procedures of an ongoing research project in Rana, north Norway.

Hestnes, E., Bakkehøi, S., *Norges Geotekniske Institutt (Norwegian Geotechnical Institute). NGI rapport,* June 1995, No.582000-11, 6p., With French summary. 5 refs.

Avalanche formation, Avalanche forecasting, Snow cover stability, Snowmelt, Snow hydrology, Slush, Meteorological factors, Norway

50-405

Cyclic triaxial tests of the Bootlegger Cove Formation, Anchorage, Alaska.

Lade, P.V., Updike, R.G., Cole, D.A., *U.S. Geological Survey. Bulletin,* 1988, No.1825, 51p., 24 refs.

Earthquakes, Landslides, Slope stability, Soil strength, Soil surveys, Soil tests, Engineering geology, Strain tests, United States—Alaska—Anchorage

50-406

Ice conditions off Greenland. [Isforholdene ved Grønland]

Fabricius, J.S., Thomsen, H., [Copenhagen], Danske Meteorologiske Institut, [1959], 12p., In Danish.

Ice surveys, Sea ice distribution, Ice conditions, Icebergs, Greenland

50-407

Japan Meteorological Agency sea ice terms. [Kishocho kaihyo yogo]

Japan Meteorological Agency. Marine Meteorology Department (Kishocho Kaiyo kishobu), *Sokko jiho (Weather service bulletin),* July 1975, 42(7), p.237-252, In Japanese with English equivalents.

Dictionaries, Terminology, Sea ice

50-408

Pressure melting and ice skating.

Colbeck, S.C., MP 3677, *American journal of physics,* Oct. 1995, 63(10), p.888-890, 10 refs.

Metal ice friction, Ice solid interface, Regelation, Ice melting, Water films, Sliding

Pressure melting cannot be responsible for the low friction of ice. The pressure needed to reach the melting temperature is above the compressive failure stress and, if it did occur, high squeeze losses would result in very thin films. Pure liquid water cannot coexist with ice much below -20°C at any pressure and friction does not increase suddenly in that range. If frictional heating and pressure melting contribute equally, the length of the wetted contact could not exceed 15 μm at a speed of 5 m/s, which seems much too short. If pressure melting is the dominant process, the water films are less than 0.08 μm thick because of the high pressures.

50-409

MANICE. Manual of standard procedures for observing and reporting ice conditions. 8th edition.

Canada. Atmospheric Environment Service. Ice Services Branch, Ottawa, Ontario, Environment Canada, Ice Centre, Apr. 1994, Var. p., 6 refs. With French version separately paged. For 7th edition see 43-4473.

Ice surveys, Ice reporting, Sea ice distribution, Ice conditions, Icebergs, Canada

50-410

Observations of anomalous oceanic crust in the Canada Basin, Arctic Ocean.

Jackson, H.R., Grantz, A., Reid, I., May, S.D., Hart, P.E., *Earth and planetary science letters,* Aug. 1995, 134(1-2), p.99-106, 19 refs.

Marine geology, Oceanography, Bottom sediment, Sedimentation, Seismic surveys, Seismic reflection, Profiles, Subglacial observations, Arctic Ocean

50-411

Neoproterozoic climatic paradox: equatorial palaeolatitude for Marinoan glaciation near sea level in South Australia.

Schmidt, P.W., Williams, G.E., *Earth and planetary science letters,* Aug. 1995, 134(1-2), p.107-124, 48 refs.

Glaciation, Geocryology, Periglacial processes, Paleoclimatology, Climatic changes, Quaternary deposits, Glacial deposits, Marine deposits, Geological surveys, Magnetic surveys, Australia

50-412

Helium atom scattering study of water adsorption on the NaCl(100) single crystal surface.
Bruch, L.W., Glebov, A., Toennies, J.P., Weiss, H., *Journal of chemical physics,* Sep. 22, 1995, 103(12), p.5109-5120, 59 refs.
Ice physics, Adsorption, Water structure, Molecular structure, Probes, Scattering, Molecular energy levels, Monomolecular films, Thermodynamic properties

50-413

Competition of precipitation particles in a model with parameterized cloud microphysics.
Wacker, U., *Journal of the atmospheric sciences,* July 15, 1995, 52(14), p.2577-2589, 14 refs.
Cloud physics, Supercooled clouds, Precipitation (meteorology), Coagulation, Supercooling, Ice formation, Particles, Classifications, Turbulent diffusion, Ice water interface, Ice crystal structure, Mathematical models

50-414

Innovations on a quartz crystal microbalance frost-point hygrometer.
Kaluzhny, M., Murphy, D.M., *Journal of atmospheric and oceanic technology,* Oct. 1995, 12(5), p.1129-1133, 12 refs.
Meteorological instruments, Air temperature, Hygrometers, Freezing points, Temperature measurement, Ice accretion, Glaze, Ice solid interface, Thermodynamics, Design

50-415

Radiation-induced solid-state polymerization in an acrylamide-water system: the effect of phase transformations of metastable high-pressure ice VIII.
Kiriukhin, D.P., Barkalov, O.I., Barkalov, I.M., *High energy chemistry,* July-Aug. 1995, 29(4), p.247-249, Translated from Khimiia vysokikh energii. 5 refs.
High pressure ice, Ice physics, Phase transformations, Polymers, Photochemical reactions, Gamma irradiation, Heating

50-416

Rock-weathering by the lichen *Lecidea auriculata* in an arctic alpine environment.
McCarroll, D., Viles, H., *Earth surface processes and landforms,* May 1995, 20(3), p.199-206, 25 refs.
Moraines, Arctic landscapes, Rock properties, Weathering, Plant ecology, Lichens, Climatic factors, Scanning electron microscopy, Geomorphology, Norway

50-417

Support of vertical-shaft collar under complex geocryological conditions.
Izakson, V.IU., Samokhin, A.V., Sleptsov, V.I., *Journal of mining science,* Mar. 1995, 30(6), p.575-582, Translated from Fiziko-tekhnicheskie problemy razrabotki poleznykh iskopaemykh. 2 refs.
Mine shafts, Soil stabilization, Geocryology, Frozen ground temperature, Frozen ground strength, Supports, Thermal regime, Artificial freezing, Mathematical models

50-418

Geochemical prerequisites for heap leaching and underground leaching under permafrost conditions.
Ptitsyn, A.B., *Journal of mining science,* May 1995, 31(1), p.75-78, Translated from Fiziko-tekhnicheskie problemy razrabotki poleznykh iskopaemykh. 26 refs.
Mining, Hydrogeology, Metals, Geochemistry, Cryogenic soils, Frozen ground chemistry, Permafrost hydrology, Leaching, Weathering

50-419

Molecular dynamics simulation of vapor deposited amorphous ice.
Essmann, U., Geiger, A., *Journal of chemical physics,* Sep. 15, 1995, 103(11), p.4678-4692, 44 refs.
Ice physics, Molecular structure, Molecular energy levels, Amorphous ice, Ice density, Ice solid interface, Ice accretion, Computerized simulation

50-420

Soil water pressure measurements in subzero air temperatures.
Gorden, D.S., Veneman, P.L.M., *Soil Science Society of America. Journal,* Sep.-Oct. 1995, 59(5), p.1242-1243, 3 refs.
Soil science, Soil water, Water pressure, Solutions, Measurement, Soil physics, Soil freezing, Countermeasures, Chemical ice prevention, Antifreezes

50-421

Glaciological zoning of the Earth. [Gliatsiologicheskie raĭonirovanie Zemli]
Tushinskiĭ, G.K., Malinovskaia, N.M., *Akademiia nauk SSSR. Mezhduvedomstvennyĭ geofizicheskiĭ komitet. Gliatsiologicheskie issledovaniia,* 1973, No.25, p.7-14, In Russian with English summary. 9 refs.
Geocryology, Geomorphology, Landscape types, Glaciation, Maps, Atmospheric circulation

50-422

On favorable and unfavorable properties of continental climates for glaciation. [O blagopriiatnykh i neblagopriiatnykh dlia oledeneniia svoĭstvakh kontinental'nykh klimatov]
Tronov, M.V., *Akademiia nauk SSSR. Mezhduvedomstvennyĭ geofizicheskiĭ komitet. Gliatsiologicheskie issledovaniia,* 1973, No.25, p.15-22, In Russian with English summary. 15 refs.
Climatic factors, Glaciation, Glacier melting, Glaciers, Snowfall, Glacial hydrology, Russia—Altay Mountains

50-423

Characteristics of precipitation and atmospheric circulation over western regions of the Greater Caucasus. [Kharakteristika osadkov i atmosfernoĭ tsirkuliatsii nad zapadnymi raĭonami Bol'shogo Kavkaza]
But, I.V., Akulinina, E.F., *Akademiia nauk SSSR. Mezhduvedomstvennyĭ geofizicheskiĭ komitet. Gliatsiologicheskie issledovaniia,* 1973, No.25, p.39-44, In Russian with English summary. 15 refs.
Precipitation (meteorology), Atmospheric circulation, Climatic factors, Glacier alimentation, Glacial hydrology, Solar activity, Russia—Caucasus

50-424

Organization and results of aerological observations in the Aktru mountain glacier basin. [Opyt organizatsii i nekotorye rezul'taty aerologicheskikh nabliudeniĭ v gorno-lednikovom basseĭne Aktru]
Slutskiĭ, V.I., *Akademiia nauk SSSR. Mezhduvedomstvennyĭ geofizicheskiĭ komitet. Gliatsiologicheskie issledovaniia,* 1973, No.25, p.74-80, In Russian with English summary. 18 refs.
Mountain glaciers, Atmospheric boundary layer, Wind (meteorology), Turbulent exchange, Wind velocity, River basins, Russia—Altay Mountains, Russia—Aktru River

50-425

Energy characteristics of a mountain-glacier basin (in the example of the Aktru basin). [Energeticheskie kharakteristiki gorno-lednikovogo basseĭna (na primere basseĭna Aktru)]
Belova, N.I., *Akademiia nauk SSSR. Mezhduvedomstvennyĭ geofizicheskiĭ komitet. Gliatsiologicheskie issledovaniia,* 1973, No.25, p.81-87, In Russian with English summary. 5 refs.
Mountain glaciers, Heat balance, Glacier ablation, Analysis (mathematics), Albedo, Radiation balance, Weather, River basins, Russia—Altay Mountains, Russia—Aktru River

50-426

Glacial-hydrological studies of the Syr Darya basin. [Opyt gliatsiogidrologicheskogo izucheniia basseĭna Syrdar'i]
Kamalov, B.A., *Akademiia nauk SSSR. Mezhduvedomstvennyĭ geofizicheskiĭ komitet. Gliatsiologicheskie issledovaniia,* 1973, No.25, p.88-96, In Russian with English summary. 16 refs.
Glacier surveys, Glacier melting, Runoff, Snowmelt, Glacial rivers, Glacial hydrology, Firn, Syr Darya River, Tajikistan, Uzbekistan

50-427

Characteristics of the glaciation of the Alay mountain system. [Nekotorye osobennosti oledeneniia Alaĭskoĭ gornoĭ sistemy]

Suslov, V.F., *Akademiia nauk SSSR. Mezhduvedomstvennyĭ geofizicheskiĭ komitet. Gliatsiologicheskie issledovaniia,* 1973, No.25, p.97-104, In Russian with English summary. 10 refs.

Mountain glaciers, Glacier surveys, Glacier oscillation, Russia—Alay Mountains

50-428

Some results of integrated studies of the Alaarcha River basin. [Nekotorye itogi kompleksnykh issledovaniĭ v basseĭne r. Alaarcha]

Tsytsenko, K.V., *Akademiia nauk SSSR. Mezhduvedomstvennyĭ geofizicheskiĭ komitet. Gliatsiologicheskie issledovaniia,* 1973, No.25, p.105-110, In Russian with English summary. 5 refs.

Hydrology, River basins, Runoff, Precipitation (meteorology), Water balance, Kyrgyzstan—Alaarcha River

50-429

Features of the regime and dynamics of the East Aksu glacier in the Kungey Alatau range. [Nekotorye cherty rezhima i dinamiki lednika Aksu Vostochnyĭ v khrebte Kungeĭ-Alatau]

Fateev, V.P., Popov, N.I., *Akademiia nauk SSSR. Mezhduvedomstvennyĭ geofizicheskiĭ komitet. Gliatsiologicheskie issledovaniia,* 1973, No.25, p.111-114, In Russian with English summary. 5 refs.

Glacier melting, Glacier ablation, Air temperature, Analysis (mathematics), CIS—Kungey Alatau, Kyrgyzstan, Kazakhstan

50-430

Data on the mass balance of Bashkar glacier in the Caucasus. [Nekotorye dannye o biudzhete massy lednika Bashkara na Kavkaze]

Korotun, I.N., *Akademiia nauk SSSR. Mezhduvedomstvennyĭ geofizicheskiĭ komitet. Gliatsiologicheskie issledovaniia,* 1973, No.25, p.115-119, In Russian with English summary. 5 refs.

Glacier mass balance, Glacier ablation, Snowfall, Caucasus Mountains

50-431

Analysis of multiyear variations in precipitation, glacier flow and reduction of glacier areas in relation to some climate forming factors. [Analiz mnogoletnikh kolebaniĭ osadkov, lednikovogo stoka i ploshchadi sokrashcheniia lednikov v sviazi s nekotorymi klimatoobrazuiushchimi faktorami]

Baĭdal, M.Kh., *Akademiia nauk SSSR. Mezhduvedomstvennyĭ geofizicheskiĭ komitet. Gliatsiologicheskie issledovaniia,* 1973, No.25, p.120-126, In Russian with English summary. 14 refs.

Climatic factors, Precipitation (meteorology), Glacier flow, Glacier ablation

50-432

Contribution of temperature and solar radiation to glacier melting depending on meteorological conditions. [Vklad temperatury i solnechnoĭ radiatsii v taianie lednikov v zavisimosti ot meteorologicheskikh usloviĭ]

Drozdov, O.A., Mosolova, G.I., *Akademiia nauk SSSR. Mezhduvedomstvennyĭ geofizicheskiĭ komitet. Gliatsiologicheskie issledovaniia,* 1973, No.25, p.133-139, In Russian with English summary. 11 refs.

Glacier melting, Glacier surfaces, Air temperature, Solar radiation, Runoff

50-433
Relationship between temperature and melting on a glacier with the temperature of the middle layers of the troposphere (in the example of glaciers of Pamiro-Alay and Western Tien Shan). [Sviaz' temperatury i taianiia na lednike s temperaturoĭ srednikh sloev troposfery (na primere nekotorykh lednikov Pamiro-Alaia i Zapadnogo Tian'-Shania)]
Volkova, M.V., Tikhanovskaia, A.A., *Akademiia nauk SSSR. Mezhduvedomstvennyĭ geofizicheskiĭ komitet. Gliatsiologicheskie issledovaniia*, 1973, No.25, p.140-146, In Russian with English summary. 12 refs.
Air temperature, Temperature effects, Glacier melting, Glacier surfaces, Surface temperature, Glacier heat balance, Temperature gradients, Russia—Tien Shan, Tajikistan—Pamir-Alay

50-434
Firn boundary as a high altitude ridge of the belt flow in mountain basins. [Firnovaia granitsa—vysotnyĭ greben' poiasnogo stoka v gornykh basseĭnakh]
Shcheglova, O.P., *Akademiia nauk SSSR. Mezhduvedomstvennyĭ geofizicheskiĭ komitet. Gliatsiologicheskie issledovaniia*, 1973, No.25, p.161-170, In Russian with English summary. 31 refs.
Glacier flow, Runoff, Mountain glaciers, Snow water content, River basins, Glacier ablation, Firn, Glacial hydrology

50-435
Conditions for formation and variability of flood flow of rivers in northern Tien Shan. [Ob usloviiakh formirovaniia i izmenchivosti pavodkovogo stoka nekotorykh rek Severnogo Tian'-Shania]
Sumarokova, V.V., *Akademiia nauk SSSR. Mezhduvedomstvennyĭ geofizicheskiĭ komitet. Gliatsiologicheskie issledovaniia*, 1973, No.25, p.180-185, In Russian with English summary. 2 refs.
Rivers, Watersheds, Meltwater, Glacier melting, Runoff, River flow, Floods, Russia—Tien Shan

50-436
Water balance of the Alps. [Vodnyĭ balans Al'p]
Chernogaeva, G.M., *Akademiia nauk SSSR. Mezhduvedomstvennyĭ geofizicheskiĭ komitet. Gliatsiologicheskie issledovaniia*, 1973, No.25, p.186-192, In Russian with English summary. 25 refs.
Water balance, River flow, Runoff, Precipitation (meteorology), River basins, Soil water, Alps

50-437
Problems in environmental protection; vol.4. [Problema okhrany prirody; vypusk 4]
Pavlov, G.F., ed, Magadan, SVKNII DVO AN SSSR, 1991, 80p., In Russian. For selected papers see 50-438 through 50-442.
Environmental impact, Environmental protection, Ecology, Geocryology

50-438
Engineering role of processes caused by the interaction of natural and artificial factors in the development of ice-hydrogeological structures. [Inzhenernaia rol' protsessov, vyzyvaemykh vzaimodeĭstviem estestvennykh i iskusstvennykh faktorov razvitiia merzlotno-gidrogeologicheskikh struktur]
Glotov, V.E., Problema okhrany prirody (Problems in environmental protection). Edited by G.F. Pavlov, Magadan, SVKNII DVO AN SSSR, 1991, p.19-25, In Russian. 6 refs.
Cryogenic structures, Engineering geology, Geocryology, Hydrogeology

50-439
Ecological situation in stress points in Russia and the problems of the All-Russian Society for Environmental Protection in the Magadan District. [Ekologicheskaia situatsiia v napriazhennykh tochkakh Rossii i zadachi Vserossiĭskogo obshchestva okhrany prirody v Magadanskoĭ oblasti]
Chernen'kiĭ, B.I., Problema okhrany prirody (Problems in environmental protection). Edited by G.F. Pavlov, Magadan, SVKNII DVO AN SSSR, 1991, p.26-37, In Russian. 5 refs.
Environmental protection, Organizations, Periglacial processes, Russia, Russia—Magadan

50-440
Specifics of the use and protection of ground water from depletion and pollution in the Magadan District. [Spetsifika ispol'zovaniia i okhrany podzemnykh vod ot istoshcheniia i zagriazneniia v Magadanskoĭ oblasti]
Elinek, L.IA., Problema okhrany prirody (Problems in environmental protection). Edited by G.F. Pavlov, Magadan, SVKNII DVO AN SSSR, 1991, p.37-40, In Russian.
Ground water, Environmental protection, Water pollution, Water supply, Taliks, Russia—Magadan

50-441
State of and prospects for the development of integrated ecological studies of the cryolithozone. [Sostoianie i perspektivy razvitiia kompleksnykh ekologicheskikh issledovaniĭ v kriolitozone]
Zabrodin, V.A., Mikhaĭlov, N.G., Glotov, V.E., Shcherban', O.V., Problema okhrany prirody (Problems in environmental protection). Edited by G.F. Pavlov, Magadan, SVKNII DVO AN SSSR, 1991, p.40-44, In Russian.
Geocryology, Organizations, Research projects

50-442
Characteristics of air pollution in the Magadan District. [Osobennosti zagriazneniia atmosfernogo vozdukha v Magadanskoĭ oblasti]
Kozovets, N.E., Problema okhrany prirody (Problems in environmental protection). Edited by G.F. Pavlov, Magadan, SVKNII DVO AN SSSR, 1991, p.45-46, In Russian.
Air pollution, Environmental impact, Russia—Magadan

50-443
Manual of ice protection. [A Jégvédelem kézikönyve]
Sipos, B., ed, Budapest, Vizdok, 1973, 239p., In Hungarian. 91 refs.
Countermeasures, Manuals, Ice reporting, Ice navigation, River ice, Ice jams, Ice blasting, Bombing, Helicopters, Ice breakup, Ice cutting, Panels

50-444
Antarctic sea ice analysis, 1991-1992.
Naval Polar Oceanography Center. Naval Ice Center, Washington, D.C., 1992, 107p., ADA-286 729.
Sea ice distribution, Maps, Spaceborne photography, Antarctica
Based on satellite data, a series of weekly maps of sea ice distribution from Jan. 7, 1991 to Dec. 31, 1992 is presented. No text or abstract accompany the maps.

50-445
Determining the extent of pressurized flow beneath Storglaciären, Sweden, using results of tracer experiments and measurements of input and output discharge.
Kohler, J., *Journal of glaciology*, 1995, 41(138), p.217-231, 36 refs.
Glaciology, Glacial hydrology, Subglacial drainage, Meltwater, Water pressure, Water flow, Flow measurement, Ice water interface, Mathematical models, Fluid dynamics, Wave propagation, Sweden—Storglaciären

50-446
Water pressure and basal sliding on Storglaciären, northern Sweden.
Jansson, P., *Journal of glaciology*, 1995, 41(138), p.232-240, 38 refs.
Glaciology, Glacial hydrology, Subglacial observations, Water pressure, Ice solid interface, Ice water interface, Glacier flow, Velocity measurement, Topographic effects, Bedrock, Basal sliding, Correlation, Periodic variations, Sweden—Storglaciären

50-447
Comments on the use of chemically based mixing models in glacier hydrology.
Sharp, M., Brown, G.H., Tranter, M., Willis, I.C., Hubbard, B., *Journal of glaciology*, 1995, 41(138), p.241-246, 34 refs.
Glaciology, Glacial hydrology, Meltwater, Chemical composition, Subglacial drainage, Water flow, Hydrography, Diffusion, Models, Accuracy

50-448
Basal friction of Ice Stream E, West Antarctica.
MacAyeal, D.R., Bindschadler, R.A., Scambos, T.A., *Journal of glaciology*, 1995, 41(138), p.247-262, 26 refs.
Glaciology, Glacier flow, Basal sliding, Ice mechanics, Glacial geology, LANDSAT, Spaceborne photography, Bedrock, Ice solid interface, Ice friction, Shear stress, Topographic features, Mathematical models, Antarctica—Ross Ice Shelf
Glacier surface velocity derived from sequential Landsat imagery and a control method are used to estimate the basal-friction distribution of Ice Stream E, a major West Antarctic ice stream. The area-averaged basal stress is approximately 1.4×10^4 Pa. Spatial variation associated with depth-averaged temperature variation gives an uncertainty of approximately $\pm 10^3$ Pa. Approximately 60% of the ice stream has a basal-stress magnitude less than 10^4 Pa, and approximately 30% has less than 10^3 Pa. These characteristics suggest the presence of a mechanically weak, water-charged subglacial till. Small-scale sticky spots where basal friction exceeds the area-averaged driving stress are scattered irregularly across the subglacial regime and comprise approximately 15% of the ice-stream area. Sticky spots cluster in regions where Landsat imagery suggests structural features in the underlying bedrock. (Auth. mod.)

50-449
Changes in jökulhlaup sizes in Grímsvötn, Vatnajökull, Iceland, 1934-91, deduced from in-situ measurements of subglacial lake volume.
Gudmundsson, M.T., Björnsson, H., Pálsson, F., *Journal of glaciology*, 1995, 41(138), p.263-272, 33 refs.
Glaciology, Glacial hydrology, Subglacial drainage, Glacial lakes, Ice dams, Ice shelves, Hydrography, Lake bursts, Periodic variations, Glacier mass balance, Ice water interface, Iceland—Vatnajökull

50-450
Characteristics of tide-water calving at Glaciar San Rafael, Chile.
Warren, C.R., Glasser, N.F., Harrison, S., Winchester, V., Kerr, A.R., Rivera, A., *Journal of glaciology*, 1995, 41(138), p.273-289, 78 refs.
Glaciology, Glacial hydrology, Calving, Icebergs, Underwater ice, Glacier ablation, Ice water interface, Glacier flow, Velocity measurement, Glacier mass balance, Periodic variations, Chile—San Rafael

50-451
Hydrological discharges and motion of Fels and Black Rapids Glaciers, Alaska, U.S.A.: implications for the structure of their drainage systems.
Raymond, C.F., Benedict, R.J., Harrison, W.D., Echelmeyer, K.A., Sturm, M., MP 3678, *Journal of glaciology*, 1995, 41(138), p.290-304, 37 refs.
Glaciology, Glacier flow, Glacial hydrology, Subglacial drainage, Flow measurement, Seasonal variations, Diurnal variations, Ice water interface, Correlation, United States—Alaska—Alaska Range
This paper compares Black Rapids and Fels Glaciers in the central Alaska Range using high-resolution time series of a number of hydrological and ice-dynamical parameters that extend through much or all of the year for several years. On each glacier, it is possible to examine the relationships among these parameters on a variety of time-scales spanning short events of hours or less, diurnal variations, seasonal patterns and year-to-year changes. The relative timing of dynamic events on the glaciers and discharges of water, solutes and sediments are of particular interest in examining the structure of the drainage system and its relation to the ice flow.

50-452
Formation and morphology of ice stalactites observed under deforming lead ice.
Perovich, D.K., Richter-Menge, J.A., Morison, J.H., MP 3679, *Journal of glaciology*, 1995, 41(138), p.305-312, 17 refs.
Sea ice, Dendritic ice, Ice growth, Ice rafting, Ice openings, Ice water interface, Ice bottom surface, Ice deformation, Ice crystal structure, Brines, Beaufort Sea
During the LeadEx main field experiment, held in Apr. 1992 in the Alaskan Beaufort Sea, a number of large ice stalactites were observed growing under young lead ice. Formation of the stalactites was associated with rafting of the thin, highly saline ice. The rafting caused the brine to drain rapidly from the ice at a temperature well below the freezing point of the surrounding water, which in turn caused ice to form in a hollow cylinder around the brine plume. Within a 15 h period after the rafting event, the stalactites, which were located approximately 10 m apart in a line along the up-wind edge of a 150 m wide lead, had grown to a length of 2 m. A detailed structural analysis of the upper part of one of these stalactites revealed that the interior channel, down which the brine flowed, was bounded by a zone of frazil ice that developed into a shell of colum-

nar ice. The growth of the columnar ice was directed radially outward and the *c* axes of these crystals were oriented perpendicular to their growth direction.

50-453

Paleoglaciology's grand unsolved problem.
Grosval'd, M.G., Hughes, T.J., *Journal of glaciology,* 1995, 41(138), p.313-332, 95 refs.
Pleistocene, Paleoclimatology, Glaciology, Ice sheets, Glacier oscillation, Glaciation, Glacial geology, Marine geology, Periodic variations, Ice cover effect, Russia

50-454

Velocity and stress fields in grounded glaciers: a simple algorithm for including deviatoric stress gradients.
Blatter, H., *Journal of glaciology,* 1995, 41(138), p.333-344, 21 refs.
Glaciology, Ice sheets, Ice mechanics, Glacier flow, Velocity, Grounded ice, Ice solid interface, Stress concentration, Mathematical models

50-455

Degree-day glacier mass-balance modelling with applications to glaciers in Iceland, Norway and Greenland.
Jóhannesson, T., Sigurdsson, O., Laumann, T., Kennett, M., *Journal of glaciology,* 1995, 41(138), p.345-358, 34 refs.
Glaciology, Glacial hydrology, Runoff, Glacier mass balance, Glacier oscillation, Ice air interface, Degree days, Climatic changes, Climatic factors, Seasonal variations, Mathematical models, Iceland, Norway, Greenland

50-456

Dry-flowing avalanche run-up and run-out.
McClung, D.M., Mears, A.I., *Journal of glaciology,* 1995, 41(138), p.359-372, 21 refs.
Glaciology, Avalanche mechanics, Avalanche modeling, Avalanche deposits, Avalanche tracks, Ice pileup, Mathematical models, Forecasting, Internal friction

50-457

Energy-balance model of lake-ice evolution.
Liston, G.E., Hall, D.K., *Journal of glaciology,* 1995, 41(138), p.373-382, 41 refs.
Lake ice, Seasonal freeze thaw, Seasonal variations, Surface temperature, Surface energy, Heat balance, Air ice water interaction, Snow cover effect, Mathematical models, Wind factors

50-458

Fracture toughness of ice and firn determined from the modified ring test.
Fischer, M.P., Alley, R.B., Engelder, T., *Journal of glaciology,* 1995, 41(138), p.383-394, 41 refs.
Glaciology, Ice sheets, Snow density, Firn, Ice strength, Ice mechanics, Cracking (fracturing), Mechanical tests, Ice solid interface, Measuring instruments, Thin sections, Porosity

50-459

Interaction of katabatic winds and the formation of blue-ice areas in East Antarctica.
Van den Broeke, M.R., Bintanja, R., *Journal of glaciology,* 1995, 41(138), p.395-407, 36 refs.
Glacier ice, Glacier mass balance, Colored ice, Ice formation, Wind factors, Blowing snow, Drift, Sublimation, Mass transfer, Snow air interface, Turbulent boundary layer, Mathematical models, Antarctica—East Antarctica

Blue-ice areas (BIAs) are an extreme example of a local mass-balance gradient and are furthermore reasonably stable in time and space owing to local feedback mechanisms. A meteorological experiment performed around a blue-ice area in Queen Maud Land showed that during drifting-snow conditions, surface wind speed over the blue ice behind the mountain barrier is equal to that away from the mountains, when corrected for surface roughness. A diagnostic model is tested for a two-dimensional profile in Adélie Coast after which it is applied to the entire East Antarctica. The present order-of-magnitude estimate shows that areas sensitive to blue-ice formation appear where precipitation is low and mean annual wind speed is high, e.g. in Queen Maud Land and the drainage basin of Lambert Glacier. The results appeared to be especially sensitive to change in inversion strength: a decrease in inversion strength weakens the katabatic flow, and thus the amount of snowdrift transport, reducing the area where BIAs can develop. (Auth. mod.)

50-460

Glaciological studies on Nelson Island, South Shetland Islands, Antarctica.
Ren, J.W., et al, *Journal of glaciology,* 1995, 41(138), p.408-412, 13 refs.
Glaciology, Glacier surveys, Glacier flow, Stratigraphy, Antarctica—Nelson Island

The ice cap on Nelson I. in the South Shetlands was studied between 1985 and 1989. Owing to intense percolation of meltwater, the snow firn layer is in the soaked facies, with a firn-ice transition at a depth of 25-26 m at the summit. A force-balance model suggests that the ice is almost linearly viscous but has a high viscosity. The model further suggests that basal sliding makes a larger contribution to the ice movement than does ice deformation. From 1970 to 1988, the average accumulation rate was 120 kg/m^2/a at the center, and between 1985 and 1989 the equilibrium-line elevation averaged 110 m a.s.l. (Auth. mod.)

50-461

Limiting resolution of ice-sheet elevations derived from pulse-limited satellite altimetry.
Wingham, D.J., *Journal of glaciology,* 1995, 41(138), p.413-422, 13 refs.
Ice sheets, Remote sensing, Topographic surveys, Spacecraft, Height finding, Radar echoes, Resolution, Data processing, Accuracy, Mathematical models

50-462

New device for the measurement of air content in polar ice.
Lipenkov, V.IA., Candaudap, F., Ravoire, J., Dulac, E., Raynaud, D., *Journal of glaciology,* 1995, 41(138), p.423-429, 19 refs.
Glacier ice, Ice composition, Ice structure, Bubbles, Measuring instruments, Performance

A new device for measuring air content in polar ice has been designed, built and tested with 22 samples of antarctic ice. The new technique is based on the barometric method which implies: (1) air extraction under vacuum by melting-refreezing of the ice sample placed in a calibrated cell, and (2) accurate air-pressure and temperature measurements. The new apparatus simplifies the experimental procedure, decreases the duration of measurement and can eventually be used in the field. It provides results with an accuracy equivalent to or better than other methods previously used. (Auth.)

50-463

Comments on "Glaciers in Picos de Europa, Cordillera Cantábrica, northwest Spain" by González Suárez and Alonso.
Frochoso, M., Castañón, J.C., *Journal of glaciology,* 1995, 41(138), p.430-432, 7 refs. For paper under discussion see 49-531.
Mountain glaciers, Glaciology, Snow cover, Fossil ice, Periglacial processes, Permafrost indicators, Spain

50-464

Glacial-ice fragments in antarctic sea ice.
Haas, C., Thomas, D.N., *Journal of glaciology,* 1995, 41(138), p.432-435, 15 refs.
Glaciology, Sea ice, Glacier ice, Sampling, Distribution, Sedimentation, Ice composition, Ice cores, Chemical analysis, Antarctica—Amundsen Sea, Antarctica—Bellingshausen Sea

The authors present a novel finding of glacial-ice fragments (up to several centimeters in diameter) in a sea-ice core obtained in the Bellingshausen Sea north of Alexander I. Glacial ice has not previously been described as an important component of sea ice, although in this core it amounted to 20% of the core volume. The features of the core, including texture, salinity and $\delta^{18}O$ measurements, are reported and the relevance of glacial ice fragments as a component of the sea ice in this region of the Antarctic is discussed. (Auth. mod.)

50-465

Damage to equipment and structures in the North. [Avarii tekhniki i sooruzheniĭ na Severe]
Novopashin, M.D., Kuz'min, V.R., Lyglaev, A.V., Ishkov, A.M., Prokhorov, V.A., Yakutsk, IAGU, 1993, 50p., In Russian.
Damage, Accidents, Safety, Cold weather operation, Petroleum industry, Petroleum transportation, Gas pipelines, Construction equipment, Motor vehicles, Airplanes

50-466

Proceedings.
Arctic and Marine Oilspill Program Technical Seminar, 13th, Edmonton, Alberta, June 6-8, 1990, Ottawa, Environment Canada, Technology Development Branch, 1990, 485p., Refs. passim. For selected papers see 50-467 through 50-480.
DLC GC1101.A73A 13th
Oil spills, Accidents, Water pollution, Soil pollution, Ice cover effect, Environmental impact, Beaches, Oil recovery, Land reclamation

50-467

Modelling the spread of oil spills in ice-infested waters.
Venkatesh, S., El-Tahan, H., Comfort, G., Abdelnour, R., Arctic and Marine Oilspill Program Technical Seminar, 13th, Edmonton, Alberta, June 6-8, 1990. Proceedings, Ottawa, Environment Canada, Technology Development Branch, 1990, p.139-156, 26 refs.
DLC GC1101.A73A 13th 1990
Oil spills, Water pollution, Ice water interface, Ice cover effect

50-468

Interactive oil spill trajectory model for Alaskan arctic waters.
Britch, R.P., Shi, N.C., Shafer, R.V., Arctic and Marine Oilspill Program Technical Seminar, 13th, Edmonton, Alberta, June 6-8, 1990. Proceedings, Ottawa, Environment Canada, Technology Development Branch, 1990, p.157-171, 14 refs.
DLC GC1101.A73A 13th 1990
Oil spills, Water pollution, Ice water interface, Ice cover effect, Computer programs, Computerized simulation, United States—Alaska

50-469

Summary of the environmental effects of the *Antonio Gramsci* oil spill in the Gulf of Finland in 1987.
Hirvi, J.P., Arctic and Marine Oilspill Program Technical Seminar, 13th, Edmonton, Alberta, June 6-8, 1990. Proceedings, Ottawa, Environment Canada, Technology Development Branch, 1990, p.179-195, 11 refs.
DLC GC1101.A73A 13th 1990
Oil spills, Tanker ships, Accidents, Water pollution, Ice cover effect, Environmental impact, Marine biology, Physiological effects, Finland, Gulf

50-470

Risk assessment of offshore oil spills.
LaBelle, R.P., Arctic and Marine Oilspill Program Technical Seminar, 13th, Edmonton, Alberta, June 6-8, 1990. Proceedings, Ottawa, Environment Canada, Technology Development Branch, 1990, p.231-242, 4 refs.
DLC GC1101.A73A 13th 1990
Oil spills, Accidents, Water pollution, Environmental impact, Oil recovery, Regional planning, United States—Alaska

50-471

Contained controlled burning of spilled oil during the *Exxon Valdez* oil spill.
Allen, A.A., Arctic and Marine Oilspill Program Technical Seminar, 13th, Edmonton, Alberta, June 6-8, 1990. Proceedings, Ottawa, Environment Canada, Technology Development Branch, 1990, p.305-313.
DLC GC1101.A73A 13th 1990
Tanker ships, Accidents, Oil spills, Water pollution, Waste disposal, Countermeasures, United States—Alaska—Prince William Sound

50-472

Improved airborne laser fluorosensor for assessment of marine pollution.
Dick, R., Jackson, R., Kuja, F., Loveless, A., Paul, M., Wiles, S., Arctic and Marine Oilspill Program Technical Seminar, 13th, Edmonton, Alberta, June 6-8, 1990. Proceedings, Ottawa, Environment Canada, Technology Development Branch, 1990, p.315-323, 7 refs.
DLC GC1101.A73A 13th 1990
Oil spills, Water pollution, Aerial surveys, Lidar, Lasers

50-473

Remote sensing of oil spills.
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Paleoclimatology, Glaciers, Glaciation, Age determination, Moraines

50-539
Radiochronometry of the ice sheet in the Upper Pleistocene. [Radiokhronometriia pokrovnogo oledeneniia v verkhnem pleĭstotsene]
Serebriannyĭ, L.R., *Akademiia nauk SSSR. Institut geografii. Materialy gliatsiologicheskikh issledovanii. Khronika obsuzhdeniia,* 1972, Vol.19, p.103-111, In Russian with English summary. 26 refs.
Pleistocene, Ice cover, Glaciation, Stratigraphy, Radioactive age determination, Paleoclimatology

50-540
Decrease in the equilibrium line of glaciers in the European Arctic during the Pleistocene. [O snizhenii granitsy pitaniia lednikov evropeĭskoĭ Arktiki v pleĭstotsene]
Grosval'd, M.G., Chernova, L.P., *Akademiia nauk SSSR. Institut geografii. Materialy gliatsiologicheskikh issledovanii. Khronika obsuzhdeniia,* 1972, Vol.19, p.112-118, In Russian with English summary. 34 refs.
Pleistocene, Glacier alimentation, Glaciation, Ice cover, Ice conditions, Sea ice distribution, Barents Sea

50-541
Changes in climate and ice distribution in the Northern Hemisphere since the maximum of the last glaciation. [Ob izmeneniiakh klimata i rasprostraneniia l'dov v severnom polusharii so vremeni maksimuma poslednego oledeneniia]
Chizhov, O.P., *Akademiia nauk SSSR. Institut geografii. Materialy gliatsiologicheskikh issledovanii. Khronika obsuzhdeniia,* 1972, Vol.19, p.126-137, In Russian with English summary. 59 refs.
Climatic changes, Paleoclimatology, Pleistocene, Glaciation, Ice conditions, Ice age theory

50-542
Rhythmic nature of the Pleistocene. [Ritmicheskaia sushchnost' pleĭstotsena]
Maksimov, E.V., *Akademiia nauk SSSR. Institut geografii. Materialy gliatsiologicheskikh issledovanii. Khronika obsuzhdeniia,* 1972, Vol.19, p.138-146, In Russian with English summary. 24 refs.
Pleistocene, Paleoclimatology, Glaciation, Ice age theory, Mountain glaciers, Ice cover, Ice conditions

50-543
Common features of the Upper Quaternary and historical glaciation in the Caucasus and Tien Shan. [O nekotorykh obshchikh chertakh verkhnechetvertichnogo i istoricheskogo oledeneniĭ na Kavkaze i Tian'-Shane]
Gerasimov, V.A., *Akademiia nauk SSSR. Institut geografii. Materialy gliatsiologicheskikh issledovanii. Khronika obsuzhdeniia,* 1972, Vol.19, p.146-153, In Russian with English summary. 32 refs.
Glaciation, Quaternary deposits, Ice conditions, Ice age theory, Paleoclimatology, Moraines, Glacial deposits, Russia—Tien Shan, Caucasus Mountains

50-544

Significance of the analysis of dominant boulders and the orientation of long axes of pebbles in moraines in studying the dynamics of ice cover (from materials from the Baltic region). [Znachenie analiza rukovodiashchikh valunov i orientirovki dlinnykh oseĭ galek v morenakh pri izuchenii dinamiki lednikovykh pokrovov (na materialakh Pribaltiki)]

Raukas, A.V., *Akademiia nauk SSSR. Institut geografii. Materialy gliatsiologicheskikh issledovanii. Khronika obsuzhdeniia,* 1972, Vol.19, p.154-160, In Russian with English summary. 47 refs.

Pleistocene, Glaciation, Glacial deposits, Paleoclimatology, Glacial till, Ice melting

50-545

Diagnostics of glacial and glacial-marine deposits and relief forms in Spitsbergen. [K diagnostike lednikovykh i lednikovo-morskikh otlozheniĭ i form rel'efa na Shpitsbergene]

Luchinskaia, T.N., Troitskiĭ, L.S., *Akademiia nauk SSSR. Institut geografii. Materialy gliatsiologicheskikh issledovanii. Khronika obsuzhdeniia,* 1972, Vol.19, p.160-168, In Russian with English summary. 23 refs.

Moraines, Glacial deposits, Marine deposits, Sediments, Microbiology, Norway—Spitsbergen

50-546

Avalanche accumulation cones as subjects of paleoglaciological studies. [Lavinnye akkumuliativnye konusy kak ob"ekty paleogliatsiologicheskikh issledovaniĭ]

Vozovik, IU.I., Miagkov, S.M., Peunov, V.G., Salova, T.A., *Akademiia nauk SSSR. Institut geografii. Materialy gliatsiologicheskikh issledovanii. Khronika obsuzhdeniia.* 1972, Vol.19, p.168-174, In Russian with English summary. 7 refs.

Avalanche mechanics, Avalanche deposits, Climatic factors, Avalanche formation

50-547

Results from the analysis of morphological characteristics of regions of glaciation based on data from the Inventory of Glaciers of the USSR. [Nekotorye rezul'taty analiza morfologicheskikh osobennosteĭ raĭonov oledeneniia po dannym Kataloga lednikov SSSR]

Vinogradov, O.N., Konovalova, G.I., *Akademiia nauk SSSR. Institut geografii. Materialy gliatsiologicheskikh issledovanii. Khronika obsuzhdeniia,* 1972, Vol.19, p.175-187, In Russian with English summary. 2 refs.

Glacier surveys, Mountain glaciers, Glacier oscillation, Glaciation, Russia

50-548

Changes in ice volume of the Fedchenko Glacier over three decades (1928-1958). [Izmeneniia ob"ema l'da lednika Fedchenko za tridtsatiletniĭ period (1928-1958 gg.)]

Dorofeev, I.G., *Akademiia nauk SSSR. Institut geografii. Materialy gliatsiologicheskikh issledovanii. Khronika obsuzhdeniia,* 1972, Vol.19, p.187-193, In Russian with English summary.

Glacier surfaces, Glacier tongues, Glacier ice, Glacier mass balance, Ice volume

50-549

Research work on the Kolka Glacier and other glaciers in Northern Ossetia in 1971. [Raboty na lednike Kolka i drugikh lednikakh Severnoĭ Osetii v 1971 g.]

Rototaev, K.P., Khodakov, V.G., *Akademiia nauk SSSR. Institut geografii. Materialy gliatsiologicheskikh issledovanii. Khronika obsuzhdeniia,* 1972, Vol.19, p.193-194, In Russian.

Glacier surveys, Expeditions, Mountain glaciers, Caucasus Mountains, Russia—Ossetia

50-550

Scientific Seminar of the Laboratory on Avalanches and Mudflows of Moscow State University. [Nauchnyĭ seminar problemnoĭ laboratorii snezhnykh lavin i seleĭ MGU]

Bozhinskiĭ, A.N., *Akademiia nauk SSSR. Institut geografii. Materialy gliatsiologicheskikh issledovanii. Khronika obsuzhdeniia,* 1972, Vol.19, p.240, In Russian.

Laboratories, Mudflows, Avalanches, Meetings

50-551

Observations in representative glacier basins of the Bol'shaya Khadata River in the 1969/70 hydrological year. [Nabliudeniia v reprezentativnom lednikovom basseĭne reki Bol'shaia Khadata v 1969/70 balansovom godu]

Gus'kov, A.S., *Akademiia nauk SSSR. Institut geografii. Materialy gliatsiologicheskikh issledovanii. Khronika obsuzhdeniia,* 1972, Vol.19, p.241-245, In Russian. 3 refs.

Mountain glaciers, Glacial rivers, River basins, Hydrography, Glacier mass balance, Glacier ablation, Glacier alimentation, Russia—Bol'shaya Khadata River, Russia—Ural Mountains

50-552

Naleds in the Suntar-Khayata Mountains. [Naledi v gorakh Suntar-Khaiata]

Koreĭsha, M.M., *Akademiia nauk SSSR. Institut geografii. Materialy gliatsiologicheskikh issledovanii. Khronika obsuzhdeniia,* 1972, Vol.19, p.247-250, In Russian. 11 refs.

Naleds, Ground ice, Runoff, Russia—Suntar-Khayata Mountains, Russia—Siberia

50-553

Avalanches and their role in nourishment of the Inyl'chek Glacier. [Laviny i ikh rol' v pitanii lednika Inyl'chek]

Ziabkin, V.V., *Akademiia nauk SSSR. Institut geografii. Materialy gliatsiologicheskikh issledovanii. Khronika obsuzhdeniia,* 1972, Vol.19, p.251-253, In Russian. 2 refs.

Avalanches, Glacier alimentation, Glacial hydrology, Temperature effects, Russia—Tien Shan, Russia—Inyl'chek River

50-554

Runoff of suspended sediments in the Dzhankuat Glacier basin in summer 1970. [Stok vzveshennykh nanosov v basseĭne lednika Dzhankuat letom 1970 goda]

Diurgerov, M.B., Freĭdlin, V.S., Chernova, L.P., *Akademiia nauk SSSR. Institut geografii. Materialy gliatsiologicheskikh issledovanii. Khronika obsuzhdeniia,* 1972, Vol.19, p.253-254, In Russian.

Suspended sediments, Glacial deposits, Mountain glaciers, Glacier ablation, Analysis (mathematics), Caucasus Mountains

50-555

Changes in the composition of major ions in the Marukh Glacier in summer, 1970. [Izmenenie soderzhaniia glavneĭshikh ionov na Marukhskom lednike letom 1970 g.]

Shadrina, O.V., *Akademiia nauk SSSR. Institut geografii. Materialy gliatsiologicheskikh issledovanii. Khronika obsuzhdeniia,* 1972, Vol.19, p.254-256, In Russian.

Mountain glaciers, Ions, Caucasus Mountains

50-556

Present glaciation in the mountains of Central Asia. [Sovremennoe oledenenie gor Tsentral'noĭ Azii]

Konovalova, G.I., *Akademiia nauk SSSR. Institut geografii. Materialy gliatsiologicheskikh issledovanii. Khronika obsuzhdeniia,* 1972, Vol.19, p.257-312, In Russian with English summary. 124 refs.

Glacier surveys, Mountain glaciers, Glacier oscillation, Glacier surfaces, Snow line, Moraines, Glacier ablation, Glacier thickness, CIS—Central Asia, China—Tibet

50-557

Possible effects of CO_2 increase on the high-speed civil transport impact on ozone.

Pitari, G., Visconti, G., *Journal of geophysical research,* Aug. 20, 1995, 99(D8), p.16,879-16,896, 24 refs.

Carbon dioxide, Ozone, Airplanes, Models, Stratosphere, Atmospheric composition, Aerosols, Air pollution

An attempt is made to model the effects of the carbon dioxide increase which is predicted in the future atmosphere when HSCT (high speed civil transport) should be operational. For this purpose a three-dimensional model is used first for the radiative and dynamical calculations followed by a photochemical two-dimensional model including an explicit gas-particle interaction in the process of aerosol formation. The denoxification and denitrification associated with the formation of nitric acid trihydrate (NAT) aerosols significantly affect the partition of chemical families. The radiative perturbation introduced by the CO_2 increase perturbs the stratospheric dynamics such that the lower stratospheric residual circulation is enhanced. This reduces by about 15% the stratospheric residence time of odd nitrogen injected by the aircraft, so that the overall perturbation of stratospheric chemistry due to HSCT is mitigated with respect to the reference case in which CO_2 is kept at the present level. Numerous graphs and several text passages refer to the high latitudes of the Southern Hemisphere. (Auth. mod.)

50-558

Correlation of late Pleistocene glaciation in the western United States with North Atlantic Heinrich events.

Clark, P.U., Bartlein, P.J., *Geology,* June 1995, 23(6), p.483-486, 48 refs.

Glaciation, Icebergs, Ice sheets, Climatic changes, North Atlantic Ocean, United States—Rocky Mountains

50-559

Reworked nannofossils in the North Atlantic Ocean and subpolar basins: Implications for Heinrich events and ocean circulation.

Rahman, A., *Geology,* June 1995, 23(6), p.487-490, 34 refs.

Fossils, Icebergs, Ocean currents, Ice sheets, North Atlantic Ocean

50-560

Intrapermafrost gas hydrates from a deep core hole in the Mackenzie Delta, Northwest Territories, Canada.

Dallimore, S.R., Collett, T.S., *Geology,* June 1995, 23(6), p.527-530, 16 refs.

Boreholes, Hydrates, Gas inclusions, Permafrost, Ice bonded permafrost, Canada—Northwest Territories—Mackenzie Delta

50-561

Two-step deglaciation of the southeastern Barents Sea.

Poliak, L., Lehman, S.J., Gataullin, V., Jull, A.J.T., *Geology,* June 1995, 23(6), p.567-571, 32 refs.

Ice sheets, Geochronology, Glacier melting, Ablation, Glacial deposits, Sediments, Barents Sea

50-562

Brazilian network of stratospheric ozone monitors: observations of the 1992 ozone hole.

Kirchhoff, V.W.J.H., et al, *Revista brasileira de geofísica,* Dec. 1993, 11(2), p.205-213, With Portuguese summary. 13 refs.

Ozone, Stratosphere, Atmospheric composition, Antarctica—Comandante Ferraz Station

A network of spectrophotometers for ground-based operation has recently been installed in Brazil and Chile to provide systematic total column ozone data. First results are described for some of these stations, including the 1992 observation of the antarctic stratospheric ozone hole at Punta Arenas, Chile, and at the Brazilian Antarctic Station Comandante Ferraz. (Auth.)

50-563

Total ozone trends in the Southern Hemisphere: an update.

Kane, R.P., *Revista brasileira de geofísica,* Dec. 1993, 11(2), p.223-231, With Portuguese summary. 20 refs.

Ozone, Atmospheric composition, Meteorological charts, Antarctica—Showa Station

In this note, the authors examine the total ozone variations at several latitudes in the Southern Hemisphere, including Showa Station. The largest variation of total ozone is seasonal, which at middle latitudes can be as large as 30% decrease from spring to autumn. The next important variation is the quasi-biennal oscillation which is irregular and can have a range of 0-10%. The long-term variation (decrease)

is comparatively small, only about 2-3% from 1980 onwards up to 1987, after which a rising tendency is indicated, after allowing for data inaccuracies. As a health hazard, the seasonal variation would be most dangerous, specially from spring to summer, between 10 AM and 3 PM. (Auth. mod.)

50-564

Observational study of the 93 "Ozone Hole" at Zhongshan Station, Antarctica.

Zheng, X.D., Zhou, X.J., Lu, L.H., Guo, S., *Chinese science bulletin*, July 1995, 40(13), p.1106-1109, 4 refs.

Ozone, Atmospheric composition, Meteorological instruments, Ultraviolet radiation, Antarctica—Zhongshan Station

Measurements of O_3, UV-B and NO_2 with a Brewer ozone-spectrophotometer were carried out at Zhongshan Station during the 9th CHINARE program (1992-93). The data of total column ozone abundance from the Brewer, compared with the TOVS data, and the dose rate of noontime biologically UV-B (290-325 nm) radiation at Zhongshan are presented in this note. An outline of the 1993 ozone hole and its impact on enhancing the penetration of UV-B radiation at Zhongshan is presented. (Auth. mod.)

50-565

Surface water temperature, salinity, and density changes in the northeast Atlantic during the last 45,000 years: Heinrich events, deep water formation, and climatic rebounds.

Maslin, M.A., Shackleton, N.J., Pflaumann, U., *Paleoceanography*, June 1995, 10(3), p.527-544, Refs. p.542-544.

Oceanography, Surface temperature, Paleoclimatology, Climatic changes, Marine deposits, Plankton, Ice rafting, Meltwater, Heat transfer

50-566

Direct measurements of transport and water properties through the Bering Strait.

Roach, A.T., et al, *Journal of geophysical research*, Sep. 15, 1995, 100(C9), p.18,443-18,457, 21 refs.

Oceanography, Ocean currents, Velocity measurement, Hydrography, Water transport, Seasonal variations, Statistical analysis, Salinity, Ice growth, Bering Sea

50-567

Preconditioning the Greenland Sea for deep convection: ice formation and ice drift.

Visbeck, M., Fischer, J., Schott, F., *Journal of geophysical research*, Sep. 15, 1995, 100(C9), p.18,489-18,502, 35 refs.

Oceanography, Ocean currents, Sea ice distribution, Ice formation, Drift, Water temperature, Stratification, Ice water interface, Ice cover effect, Convection, Ice openings, Wind factors, Models, Greenland Sea

50-568

Circulation and transport of water along the western Weddell Sea margin.

Muench, R.D., Gordon, A.L., *Journal of geophysical research*, Sep. 15, 1995, 100(C9), p.18,503-18,515, 27 refs.

Oceanography, Ocean currents, Pack ice, Drift stations, Ice cover effect, Ice water interface, Hydrography, Water transport, Antarctica—Weddell Sea

Ocean current, temperature and salinity data obtained from the western Weddell Sea during the austral winter 1992 U.S.-Russian drifting ice station experiment Ice Station Weddell 1 are used to describe water circulation and transport. Surface-to-bottom baroclinic currents were computed by applying the geostrophic approximation to derived density data. These were corrected using current measurements obtained from drifting current meter arrays, and the resulting total currents were vertically integrated to obtain volume transports. Transport was found to be northward in the region, which encompassed the western boundary current of the cyclonic Weddell Sea gyre. This northward transport increased from south to north by more than a factor of 2. The increase in northward transport was compensated for by westward flow from the interior of the gyre into the western boundary region. A thick bottom layer of cold water was identifiable by its water mass characteristics as Weddell Sea Bottom Water originating on the southwestern and western shelf regions. Its north flowing volume was consistent with past estimates of a 1.5-2 x 10^6 m^3/s production rate coupled with a 300-400% transport increase due to entrainment during downslope flow from the shelves to the deep basin. (Auth. mod.)

50-569

Fine structure, microstructure, and vertical mixing processes in the upper ocean in the western Weddell Sea.

Robertson, R., Padman, L., Levine, M.D., *Journal of geophysical research*, Sep. 15, 1995, 100(C9), p.18,517-18,535, 50 refs.

Oceanography, Ocean currents, Drift stations, Hydrography, Water temperature, Heat transfer, Thermal diffusion, Profiles, Pack ice, Ice water interface, Antarctica—Weddell Sea

The upward flux of heat from the subsurface core of Warm Deep Water (WDW) to the perennially ice-covered sea surface over the continental slope in the western Weddell Sea is estimated using data obtained during Feb.-June 1992 from a drifting ice station. The diapycnal heat flux is estimated to be about 3 W/m^2, predominantly because of double-diffusive convection. The estimated mean rate of heat transfer from the mixed layer to the ice is 1.7 W/m^2. It is hypothesized that isopycnal mixing along sloping intrusions also contributes to the loss of heat from the WDW in this region. Intrusions occur intermittently throughout this experiment but are most commonly found near the boundary of the warm-core current and the shelf-modified water to the east. These heat fluxes are significantly lower than the basin-averaged value of 19 W/m^2 that is required to balance the heat budget of the Weddell Gyre. (Auth. mod.)

50-570

Ridging and strength in modeling the thickness distribution of arctic sea ice.

Flato, G.M., Hibler, W.D., III, *Journal of geophysical research*, Sep. 15, 1995, 100(C9), p.18,611-18,626, 53 refs.

Sea ice distribution, Ice cover thickness, Pressure ridges, Ice cover strength, Ice mechanics, Ice deformation, Ice models, Mathematical models, Snow cover effect, Arctic Ocean

50-571

Fine resolution numerical model of the Iceland-Faroe front with open boundary conditions.

Griffiths, C., *Journal of geophysical research*, Aug. 15, 1995, 100(C8), p.15,915-15,931, 31 refs.

Oceanography, Ocean currents, Hydrography, Mathematical models, Simulation, Topographic effects, Bottom topography, Greenland Sea

50-572

Disposition of solar radiation in sea ice and the upper ocean.

Ebert, E.E., Schramm, J.L., Curry, J.A., *Journal of geophysical research*, Aug. 15, 1995, 100(C8), p.15,965-15,975, 22 refs.

Sea ice, Ice cover thickness, Oceanography, Insolation, Radiation balance, Albedo, Ice optics, Light transmission, Ice melting, Snow cover effect, Ice models, Mathematical models, Ice water interface

50-573

Anatomy of the Arctic Frontal Zone in the Greenland Sea.

van Aken, H.M., Budéus, G., Hähnel, M., *Journal of geophysical research*, Aug. 15, 1995, 100(C8), p.15,999-16,014, 41 refs.

Oceanography, Ocean currents, Hydrography, Water temperature, Stratification, Heat transfer, Salinity, Greenland Sea

50-574

Release of brine-enriched shelf water from Storfjord into the Norwegian Sea.

Schauer, U., *Journal of geophysical research*, Aug. 15, 1995, 100(C8), p.16,015-16,028, 30 refs.

Oceanography, Ocean currents, Hydrography, Ice formation, Polynyas, Ice water interface, Ice cover effect, Brines, Salinity, Wind factors, Water transport, Norwegian Sea

50-575

Modelling of continuous crushing of ice in front of offshore structures.

Brown, T.G., Morsy, U.A., *Canadian journal of civil engineering*, June 1995, 22(3), p.544-550, With French summary. 13 refs.

Sea ice, Ice mechanics, Offshore structures, Ice solid interface, Ice breaking, Cracking (fracturing), Fracture zones, Rheology, Damage, Viscosity, Mathematical models

50-576

Thermal protection of concrete dams subject to freeze-thaw cycles.

Léger, P., Côté, M., Tinawi, R., *Canadian journal of civil engineering*, June 1995, 22(3), p.588-602, With French summary. 27 refs.

Concrete structures, Dams, Degradation, Frost penetration, Freeze thaw cycles, Frost protection, Thermal stresses, Thermal insulation, Design criteria, Thermal analysis

50-577

Creep, shrinkage, frost, and sulphate resistance of high strength concrete.

Ghosh, S., Nasser, K.W., *Canadian journal of civil engineering*, June 1995, 22(3), p.621-636, With French summary. 31 refs.

Concrete durability, Concrete strength, Concrete admixtures, Concrete aggregates, Frost resistance, Mechanical tests, Temperature effects, Freeze thaw tests, Creep, Microstructure, Compressive properties

50-578

Resilient modulus of cohesive soils and the effect of freeze-thaw.

Lee, W.J., Bohra, N.C., Altschaeffl, A.G., White, T.D., *Canadian geotechnical journal*, Aug. 1995, 32(4), p.559-568, With French summary. 34 refs.

Subgrade soils, Pavement bases, Mechanical tests, Freeze thaw tests, Soil mechanics, Soil compaction, Strain tests, Stress concentration, Elastic properties

50-579

Cyclic direct simple shear testing of a Beaufort Sea clay.

McCarron, W.O., Lawrence, J.C., Werner, R.J., Germaine, J.T., Cauble, D.F., *Canadian geotechnical journal*, Aug. 1995, 32(4), p.584-600, With French summary. 12 refs.

Oceanography, Ocean bottom, Clay soils, Soil mechanics, Soil strength, Mechanical tests, Dynamic loads, Shear stress, Offshore structures, Stability, Foundations, Strains, Beaufort Sea

50-580

Field observations of frost action in intact and weathered Champlain Sea clay.

Konrad, J.M., Bergeron, G., Roy, M., La Rochelle, P., Leroueil, S., *Canadian geotechnical journal*, Aug. 1995, 32(4), p.689-700, With French summary. 17 refs.

Clay soils, Geocryology, Soil mechanics, Soil strength, Freeze thaw cycles, Frost action, Frost heave, Thaw weakening, Mechanical tests

50-581

Effects of freeze-thaw cycles on the properties of a sensitive clay. [Effets de cycles de gel-dégel sur les propriétés d'une argile sensible]

Roy, M., Bergeron, G., La Rochelle, P., Leroueil, S., Konrad, J.M., *Canadian geotechnical journal*, Aug. 1995, 32(4), p.725-740, In French with English summary. 27 refs.

Clay soils, Soil mechanics, Geocryology, Freeze thaw tests, Freeze thaw cycles, Mechanical tests, Soil structure, Permeability, Shear strength, Freezing front, Scanning electron microscopy

50-582

Time-dependent displacement behaviour of model adfreeze and grouted piles in saline frozen soils: discussion and reply.

Juárez-Badillo, E., Biggar, K.W., Sego, D.C., *Canadian geotechnical journal*, Aug. 1995, 32(4), p.747-748, 4 refs. For paper under discussion see 48-4839.

Geocryology, Saline soils, Pile structures, Frozen ground mechanics, Soil creep, Settlement (structural), Analysis (mathematics), Shear strength

50-583

10-century comparison of prominent bipolar volcanic events in ice cores.

Langway, C.C., Jr., Osada, K., Clausen, H.B., Hammer, C.U., Shoji, H., *Journal of geophysical research,* Aug. 20, 1995, 100(D8), p.16,241-16,247, 38 refs.

Ice sheets, Ice cores, Volcanic ash, Sampling, Isotope analysis, Stratigraphy, Snow accumulation, Aerosols, Periodic variations, Geochronology, Correlation, Greenland—Dye 3, Antarctica—Amundsen-Scott Station, Antarctica—Byrd Station

Measurements of key chemical and physical parameters made along continuous long sections of polar ice cores can provide reliable past snow accumulation rates and other environmental records. The prime accumulation indicators include variations found in the stable isotopes, ionic constituents, and acidity concentration levels; and physical changes in the strata and structure. Cross correlations of the time series curves resulting from multiparameter analyses of ice cores from Antarctica and Greenland have been made. The results permit construction of a bipolar chemical stratigraphy chronology of volcanic events that is coherent with the $\delta^{18}O$ and Electrical Conductivity Method data sets and consistent back-in-time with historically recorded volcanic activity. (Auth. mod.)

50-584

Long-term changes in the acid and salt concentrations of the Greenland Ice Core Project ice core from electrical stratigraphy.

Wolff, E.W., Moore, J.C., Clausen, H.B., Hammer, C.U., Kipfstuhl, J., Fuhrer, K., *Journal of geophysical research,* Aug. 20, 1995, 100(D8), p.16,249-16,263, 31 refs.

Paleoclimatology, Climatic changes, Atmospheric composition, Ice sheets, Ice cores, Sampling, Stratigraphy, Chemical properties, Impurities, Periodic variations, Electrical measurement, Electrical resistivity, Greenland

50-585

Simulation of summer snowmelt on the Greenland ice sheet using a one-dimensional model.

Rowe, C.M., Kuivinen, K.C., Jordan, R., MP 3681, *Journal of geophysical research,* Aug. 20, 1995, 100(D8), p.16,265-16,273, 52 refs.

Ice sheets, Glacier mass balance, Snowmelt, Snow hydrology, Ice sheets, Heat balance, Snow thermal properties, Glacial meteorology, Snow air interface, Snow physics, Profiles, Mathematical models, Snow cover effect, Simulation, Greenland

A one-dimensional heat and mass balance model of a snowpack over frozen soil was modified for use in glacial environments. The model solves a set of governing equations for the energy and mass balances of the snow, subject to observed meteorological conditions at the upper boundary and the assumption of a steady state at the lower boundary. The initial state of the snowpack is defined by the temperature, density and grain size profiles at the beginning of the simulation period. The data used to test the model on the Greenland ice sheet are a subset of the meteorological and surface data collected during the 1990 summer field season by the Swiss Federal Institute of Technology (ETH) Greenland Expedition. The site was located near the equilibrium line elevation on the west slope of the ice sheet. The relatively large amount of snowmelt experienced at this site during the summer of 1990 provides a robust test of the snowmelt model. Both the simulated height and mass of the snowpack agree well with the observations. The evolution of profiles of temperature, density and liquid water content also conform to the expectations of the physical changes taking place in the snowpack during melt.

50-586

Contributions of snow, fog, and dry deposition to the summer flux of anions and cations at Summit, Greenland.

Bergin, M.H., et al, *Journal of geophysical research,* Aug. 20, 1995, 100(D8), p.16,275-16,288, 42 refs.

Ice sheets, Ice cores, Sampling, Glacial meteorology, Aerosols, Sedimentation, Snow air interface, Ion diffusion, Impurities, Particle size distribution, Seasonal variations, Geochemical cycles, Greenland—Summit

50-587

Hydrologic cycle parameterization for energy balance climate models.

Chu, S.P., Ledley, T.S., *Journal of geophysical research,* Aug. 20, 1995, 100(D8), p.16,289-16,303, 60 refs.

Climatology, Surface temperature, Hydrologic cycle, Heat balance, Moisture transfer, Thermodynamics, Ice sheets, Ice growth, Ice melting, Snow accumulation, Ice cover effect, Simulation, Mathematical models

50-588

Three-dimensional simulation of the influence of a cutoff low on the distribution of northern hemisphere processed air in late January 1992.

Cerniglia, M.C., Rood, R.B., Douglass, A.R., *Journal of geophysical research,* Aug. 20, 1995, 100(D8), p.16,431-16,443, 40 refs.

Climatology, Polar atmospheres, Stratosphere, Synoptic meteorology, Atmospheric composition, Chemical properties, Atmospheric pressure, Air masses, Air flow, Turbulent diffusion, Wind factors, Simulation

50-589

Possible sources and preferred pathways for biogenic and non-sea-salt sulfur for the high Arctic.

Hopke, P.K., Barrie, L.A., Li, S.M., Cheng, M.D., Li, C., Xie, Y., *Journal of geophysical research,* Aug. 20, 1995, 100(D8), p.16,595-16,603, 17 refs.

Polar atmospheres, Climatology, Atmospheric composition, Air pollution, Haze, Aerosols, Chemical properties, Origin, Statistical analysis, Seasonal variations, Canada—Northwest Territories—Alert

50-590

Post-Industrial Revolution changes in large-scale atmospheric pollution of the northern hemisphere by heavy metals as documented in central Greenland snow and ice.

Candelone, J.P., Hong, S.M., Pellone, C., Boutron, C.F., *Journal of geophysical research,* Aug. 20, 1995, 100(D8), p.16,605-16,616, 64 refs.

Climatology, Air pollution, Atmospheric composition, Aerosols, Metals, Ice sheets, Ice cores, Snow composition, Chemical analysis, Sampling, Periodic variations, Snow air interface, Greenland—Summit

50-591

Changes in antarctic stratospheric aerosol characteristics due to volcanic eruptions as monitored by the Stratospheric Aerosol and Gas Experiment II satellite.

Saxena, V.K., Anderson, J., Lin, N.H., *Journal of geophysical research,* Aug. 20, 1995, 100(D8), p.16,735-16,751, 54 refs.

Polar atmospheres, Stratosphere, Volcanic ash, Aerosols, Particle size distribution, Atmospheric attenuation, Ozone, Photometry, Profiles, Statistical analysis, Climatic factors

The objectives of this study are (1) to use Stratospheric Aerosol and Gas Experiment II (SAGE II)-based extinction measurements to study and identify the Mount Pinatubo volcanic aerosol plume within and in the vicinity of the antarctic vortex and to investigate the associated implications of ozone depletion during the austral spring of 1991, and (2) to use the known characteristics of the volcanic aerosol as a tracer for investigating the south polar transport across the vortex edge and stratospheric-tropospheric exchange and to compute estimates of sedimentation velocities and deposition fluxes of the Pinatubo aerosol. Ground truth measurements in the form of analyzing precipitation samples and shallow snow pits collected from the Marr Ice Piedmont on Palmer Peninsula have begun and will continue through the austral spring of 1996. (Auth. mod.)

50-592

Surveying and mapping program of the United States in Antarctica.

Mullen, R.R., Mullins, J.L., *Antarctic journal of the United States,* 1993, 28(5), p.333-334.

Research projects, Geodetic surveys, Mapping, Topographic maps, Spaceborne photography, Land ice

The National Science Foundation (NSF), through the U.S. Geological Survey (USGS), supports surveying and mapping in Antarctica. During the 1992-93 season, the USGS National Mapping Division (NMD) directed its antarctic surveying and mapping activities toward the acquisition of global positioning system (GPS) geodetic mapping control, topographic and satellite image mapping, seismology, doppler satellite tracking, and the compilation of an antarctic gazetteer.

50-593

High-resolution ultraviolet spectral irradiance monitoring program in polar regions: six years (and growing) of data available to polar researchers in ozone and ultraviolet related studies.

Booth, C.R., Lucas, T.B., Morrow, J.H., *Antarctic journal of the United States,* 1993, 28(5), p.338-341, Refs. p. 340-341.

Data processing, Ozone, Ultraviolet radiation, Research projects, Polar regions, Meteorological instruments

The Antarctic Ultraviolet Spectroradiometer Monitoring Network was established by the U.S. National Science Foundation (NSF) in 1988 in response to predictions of increased ultraviolet (UV) radiation in the polar regions. The network consists of several automated, high-resolution spectroradiometers placed in strategic locations in the Antarctic and the Arctic. Spectroradiometers were installed in four locations between Feb. and Nov. 1988, and a fifth instrument was installed at Barrow, AK, in Dec. 1990. A table lists the positions and the period of data referred to in this report for these sites. A figure presents the time course of erythermally weighted irradiance for six sites. The data for the Northern and Southern Hemisphere show the expected seasonal patterns. For this data set, Palmer Station shows the highest exposure, occurring when traces of ozone-depleted air persisted until nearly midsummer.

50-594

Cation trace analysis of snow and firn samples from high-alpine sites by ion chromatography.

Döscher, A., Schwikowski, M., Gäggeler, H.W., *Journal of chromatography A,* July 7, 1995, 706(1-2), p.249-252, 12 refs.

Climatology, Air pollution, Atmospheric composition, Alpine landscapes, Firn, Snow composition, Sampling, Environmental tests, Chemical analysis, Impurities, Ion diffusion, Switzerland

50-595

Compressive creep of polycrystalline ice containing a liquid phase.

de la Chapelle, S., Duval, P., Baudelet, B., *Scripta metallurgica et materialia,* Aug. 1, 1995, 33(3), p.447-450, 20 refs.

Ice mechanics, Ice creep, Strain tests, Liquid phases, Ice deformation, Ice water interface, Compressive properties

50-596

Numerical models for the simulation of the simultaneous heat and mass transfer during food freezing and storage.

Tocci, A.M., Mascheroni, R.H., *International communications in heat and mass transfer,* Mar.-Apr. 1995, 22(2), p.251-260, 9 refs.

Frozen liquids, Porous materials, Heat transfer, Mass transfer, Freezing rate, Cold storage, Mathematical models, Ice sublimation, Ice physics

50-597

Development of a regional climate model of the western Arctic.

Lynch, A.H., Chapman, W.L., Walsh, J.E., Weller, G., *Journal of climate,* June 1995, 8(6), p.1555-1570, 49 refs.

Climatology, Cloud physics, Polar atmospheres, Marine meteorology, Air ice water interaction, Convection, Ice air interface, Sea ice distribution, Ice cover effect, Simulation, Mathematical models, Heat flux, Moisture transfer

50-598

Competing roles of heat and freshwater flux in forcing thermohaline oscillations.

Pierce, D.W., Barnett, T.P., Mikolajewicz, U., *Journal of physical oceanography,* Sep. 1995, 25(9), p.2046-2064, Refs. p.2063-2064.

Ocean currents, Models, Oceanography, Thermal properties, Sea ice distribution, Salinity

50-599

Climatological aspects of cyclone development and decay in the Arctic.

Serreze, M.C., *Atmosphere-ocean,* Mar. 1995, 33(1), p.1-23, With French summary. 35 refs.

Climatology, Atmospheric circulation, Fluid dynamics, Marine meteorology, Polar atmospheres, Seasonal variations, Statistical analysis, Ice cover effect, Air ice water interaction, Arctic Ocean

50-600

Energy partitioning at treeline forest and tundra sites and its sensitivity to climate change.

Lafleur, P.M., Rouse, W.R., *Atmosphere-ocean,* Mar. 1995, 33(1), p.121-133, With French summary. 22 refs.

Climatology, Subarctic landscapes, Tundra climate, Forest lines, Surface energy, Soil air interface, Heat flux, Climatic changes, Seasonal variations, Canada—Manitoba—Churchill

50-601

Comments on "On the deterioration of icebergs in the marginal ice zone" (Venkatesh et al., 1994).
Marko, J.R., Fissel, D.B., Venkatesh, S., Murphy, D.L., Wright, G.E., *Atmosphere-ocean,* Mar. 1995, 33(1), p.187-194, 6 refs. Includes reply. For paper under discussion see 49-1532.
Sea ice, Icebergs, Ice breakup, Ice deterioration, Calving, Ice water interface, Forecasting, Mathematical models, Accuracy

50-602

Snowmobile injuries in Kiruna, northern Sweden.
Sundström, I., Zetterqvist, H., Björnstig, U., *Arctic medical research,* Oct. 1994, 53(4), p.189-195, 15 refs.
Snow vehicles, Accidents, Statistical analysis, Classifications, Human factors, Sweden

50-603

Would a helmet law for snowmobile riders reduce head injuries.
Björnstig, U., Öström, M., Eriksson, A., *Arctic medical research,* Oct. 1994, 53(4), p.196-199, 15 refs.
Snow vehicles, Accidents, Countermeasures, Legislation, Statistical analysis, Human factors, Sweden

50-604

Snow disasters and countermeasure against it.
Ikarashi, T., *Japan. National Research Institute for Earth Science and Disaster Prevention. Nagaoka Institute of Snow and Ice Studies. Contributions (Papers and reports, 1988-1994),* 1995, No.2, p.1-10, In Japanese. Reprinted from Gekkan shobo (Monthly fire fighting), 1988, Vol.10, No.1, p.4-13.
Avalanches, Snowstorms, Road icing, Accidents, Safety, Road maintenance, Japan

50-605

Casualties due to snow and ice phenomena.
Ikarashi, T., *Japan. National Research Institute for Earth Science and Disaster Prevention. Nagaoka Institute of Snow and Ice Studies. Contributions (Papers and reports, 1988-1994),* 1995, No.2, p.11-17, In Japanese. Reprinted from Gekkan shobo (Monthly fire fighting), 1994, Vol.16, No.1, p.95-102.
Avalanches, Snowstorms, Road icing, Accidents, Safety, Japan

50-606

Characteristics of snowfalls and snowpacks and an overview of snow and ice research in Japan during the past 50 years.
Nakamura, T., *Japan. National Research Institute for Earth Science and Disaster Prevention. Nagaoka Institute of Snow and Ice Studies. Contributions (Papers and reports, 1988-1994),* 1995, No.2, p.19-35, In Japanese with English summary. 11 refs. Reprinted from Chigaku zasshi (Journal of geography), 1989, Vol.98, No.5, p.141-157 (cumulative p.671-687).
Snow surveys, Snowfall, Snowstorms, Marine meteorology, Ice surveys, Research projects, Japan

50-607

Detection methods of heavy rainfalls and snowfalls using multi-parameter radars. Section 5. Observations of precipitation clouds using dual wavelength radar systems. [Maruchi parameta reda ni yoru gou gosetsu no kenshutsu hoho no kento. 5. Nihacho reda ni yoru kosuiun kansoku jirei]
Iwanami, K., *Japan. National Research Institute for Earth Science and Disaster Prevention. Nagaoka Institute of Snow and Ice Studies. Contributions (Papers and reports, 1988-1994),* 1995, No.2, p.119-160, In Japanese. Reprinted from Monbusho kagaku kenkyuhi juten ryoiki kenkyu Shizen saigai no yosoku to bosairiki wakingu gurupu kenkyu seika hokokusho (Ministry of Education. Grant in Aid for Scientific Research on Priority Areas. Working Group. Report), Mar. 1993, p.44-84.
Cloud physics, Clouds (meteorology), Precipitation (meteorology), Snowfall, Weather forecasting, Radar echoes, Radar tracking

50-608

Studies on the prediction of heavy snowfall disasters in urban areas and its reduction and protection. Section 3.1. Analytical methods of observational data using a Doppler radar (III)—other general methods. [Toshi no gosetsu saigai no yosoku to keigen bojo ni kansuru kenkyu. 3.1. Ichi dai no dopura reda ni yoru kansoku deta no kaisekiho (III)—sono ta no ippanteki hoho]

Iwanami, K., Asuma, Y., *Japan. National Research Institute for Earth Science and Disaster Prevention. Nagaoka Institute of Snow and Ice Studies. Contributions (Papers and reports, 1988-1994),* 1995, No.2, p.161-175, In Japanese. 17 refs. Reprinted from Monbusho kagaku kenkyuhi juten ryoiki kenkyu Shizen saigai no yosoku to bosairiki wakingu gurupu kenkyu seika hokokusho (Ministry of Education. Grant in Aid for Scientific Research on Priority Areas. Working Group. Report), Mar. 1993, No.A-4-2, p.97-110.

Weather observations, Weather forecasting, Radar echoes, Radar tracking, Data processing

50-609

Review and perspective of snow avalanche researches and the application to mitigation and prevention of avalanche disasters. [Nadare no kenkyu to sono saigai boshi no genjo to shorai tenbo]

Nakamura, T., *Japan. National Research Institute for Earth Science and Disaster Prevention. Nagaoka Institute of Snow and Ice Studies. Contributions (Papers and reports, 1988-1994),* 1995, No.2, p.271-288, In Japanese. 61 refs. Reprinted from Nadare yochi yobo Nagaoka kokusai shinpojiumu ronbunshu (Nagaoka International Symposium on Avalanche Control, 1992. Proceedings), p.5-22.

Avalanche forecasting, Avalanche mechanics, Avalanche engineering, Avalanches, Accidents

50-610

Powder snow avalanches and flow avalanches. [Enkei nadare to nagare gata nadare]

Nohguchi, Y., *Japan. National Research Institute for Earth Science and Disaster Prevention. Nagaoka Institute of Snow and Ice Studies. Contributions (Papers and reports, 1988-1994),* 1995, No.2, p.352-355, In Japanese. 4 refs. Reprinted from Gekkan chikyu (Earth monthly), 1993, Vol.15, No.8, p.466-469.

Avalanche formation, Avalanche mechanics, Avalanche tracks

50-611

Experiments of snow removal based on the use of a blower. (1) Pressure loss in a horizontal straight pipe.

Kobayashi, T., Kumagai, M., *Japan. National Research Institute for Earth Science and Disaster Prevention. Nagaoka Institute of Snow and Ice Studies. Contributions (Papers and reports, 1988-1994),* 1995, No.2, p.384-400, In Japanese with English summary. 11 refs. Reprinted from Japan, National Research Center for Disaster Prevention, Report, 1989, No.44, p.105-121.

Snow removal, Snow removal equipment, Ducts, Air flow

50-612

Development of pneumatic conveying technologies for snow.

Kobayashi, T., *Japan. National Research Institute for Earth Science and Disaster Prevention. Nagaoka Institute of Snow and Ice Studies. Contributions (Papers and reports, 1988-1994),* 1995, No.2, p.498-500, In Japanese. 2 refs. Reprinted from Doboku gakkaishi (Japan Society of Civil Engineers. Journal), 1994, Vol.79, No.1, p.22-24.

Snow removal, Snow removal equipment, Ducts, Air flow

50-613

Release of soluble and insoluble impurities from the surface of a glacier by melting observed at Glacier No.1 at the headwaters of Urumqi River, Tianshan Mountains, China.

Goto-Azuma, K., Nakawo, M., Han, J.K., *Japan. National Research Institute for Earth Science and Disaster Prevention. Nagaoka Institute of Snow and Ice Studies. Contributions (Papers and reports, 1988-1994),* 1995, No.2, p.634-643, 10 refs. Reprinted from Proceedings of the Japan-China International Symposium on the Study of the Mechanism of Desertification, 1994, p.191-200.

Mountain glaciers, Glacial hydrology, Snow ice interface, Meltwater, Runoff, Water pollution, Hydrogeochemistry, Water chemistry, Suspended sediments, Ion density (concentration), China—Tian Shan

50-614

Ice core records for analyzing desertification.

Nakawo, M., Goto-Azuma, K., Kamiyama, K., Han, J.K., *Japan. National Research Institute for Earth Science and Disaster Prevention. Nagaoka Institute of Snow and Ice Studies. Contributions (Papers and reports, 1988-1994),* 1995, No.2, p.702-710, 9 refs. Reprinted from Proceedings of the Japan-China International Symposium on the Study of the Mechanism of Desertification, 1994, p.16-24.

Ice cores, Glacier ice, Ice composition, Ice dating, Snow ice interface, Firn stratification, Paleoclimatology, Deserts, Desiccation, China—Kunlun Mountains

50-615

Dust and particle record in glaciers around Taklamakan Desert area and its environmental implication.

Han, J.K., Nakawo, M., Wang, N.L., Zhang, W.C., Wang, X.J., Goto-Azuma, K., *Japan. National Research Institute for Earth Science and Disaster Prevention. Nagaoka Institute of Snow and Ice Studies. Contributions (Papers and reports, 1988-1994),* 1995, No.2, p.711-720, 12 refs. Reprinted from Proceedings of the Japan-China International Symposium on the Study of the Mechanism of Desertification, 1994, p.70-79.

Mountain glaciers, Ice cores, Glacier ice, Ice composition, Dust, Deserts, Paleoclimatology, China—Taklimakan Desert

50-616

Space in the service of the changing Earth; Remote sensing for environmental monitoring and resource management, Vol.2.

European "International Space Year" Conference, Munich, Germany, 30 March-4 April 1992, Paris, European Space Agency, 1992, p.405-942, Refs. passim. For selected papers see 50-617 through 50-624. For vol.1 see 50-219 through 50-229.

DLC QB495.E92 1992 Vol.2

Remote sensing, Spaceborne photography, Mapping, Data processing

50-617

Geologic and hydrogeologic mapping of Iceland with multisensor data (JERS-1, ERS-1, SPOT, Landsat and SEASAT).

Münzer, U., Böhm, Ch., European "International Space Year" Conference, Munich, Germany, 30 March-4 April 1992. Vol.2. Remote sensing for environmental monitoring and resource management, Paris, European Space Agency, 1992, p.509-511.

DLC QB495.E92 1992 Vol.2

Remote sensing, Spaceborne photography, Mapping, Geological maps, Hydrogeology, Data processing, Iceland

50-618

Demonstration of seasonal changes in the territory of Finland using multitemporal NOAA-AVHRR data.

Andersson, K., European "International Space Year" Conference, Munich, Germany, 30 March-4 April 1992. Vol.2. Remote sensing for environmental monitoring and resource management, Paris, European Space Agency, 1992, p.557-558.

DLC QB495.E92 1992 Vol.2

Remote sensing, Seasonal variations, Spaceborne photography, Imaging, Radiometry, Finland

50-619

Alternative strategies for the use of satellite data analysis systems for hazard monitoring and disaster mitigation.

Barrett, E.C., Beaumont, M.J., European "International Space Year" Conference, Munich, Germany, 30 March-4 April 1992. Vol.2. Remote sensing for environmental monitoring and resource management, Paris, European Space Agency, 1992, p.581-586, 12 refs.

DLC QB495.E92 1992 Vol.2

Monitors, Data processing, Spaceborne photography, Remote sensing, Snow cover, Computers, Computer applications, United Kingdom, Pakistan

50-620

Use of remote sensing spacecrafts in real time support to disaster management: interfaces with ground segment facilities and services.

Tortorici Montaperto, A., Rossi, F., European "International Space Year" Conference, Munich, Germany, 30 March-4 April 1992. Vol.2. Remote sensing for environmental monitoring and resource management, Paris, European Space Agency, 1992, p.599-604, 3 refs.

DLC QB495.E92 1992 Vol.2

Remote sensing, Spaceborne photography, Data processing, Monitors, Warning systems, Spacecraft, Soil erosion, Snow, Floods, Forest fires, Water pollution, Air pollution, Radioactivity

50-621

Remote sensing in hydrology and water management.

Haefner, H., Schumann, A.H., European "International Space Year" Conference, Munich, Germany, 30 March-4 April 1992. Vol.2. Remote sensing for environmental monitoring and resource management, Paris, European Space Agency, 1992, p.633-637, 13 refs.

DLC QB495.E92 1992 Vol.2

Hydrologic cycle, Hydrology, Runoff, Water reserves, Remote sensing, Precipitation (meteorology), Rain, Snow cover distribution, Snowmelt, Models

50-622

NORSMAP '89-Norwegian remote sensing spectrometry for mapping and monitoring of algal blooms and pollution.

Pettersson, L.H., Johannessen, O.M., Frette, Ø., European "International Space Year" Conference, Munich, Germany, 30 March-4 April 1992. Vol.2. Remote sensing for environmental monitoring and resource management, Paris, European Space Agency, 1992, p.681-686, 15 refs.

DLC QB495.E92 1992 Vol.2

Remote sensing, Algae, Water pollution, Monitors, Spectroscopy, Spaceborne photography, North Sea

50-623

Swedish Forest Information Atlas.

Rosengren, M., Gustafsson, L.E., Österlund, H., European "International Space Year" Conference, Munich, Germany, 30 March-4 April 1992. Vol.2. Remote sensing for environmental monitoring and resource management, Paris, European Space Agency, 1992, p.801-804, 2 refs.

DLC QB495.E92 1992 Vol.2

Maps, LANDSAT, Mapping, Forestry, Data processing, Wetlands, Landscape types, Snow cover distribution, Sweden

50-624

Condensation on cooled surfaces of optical devices at the cosmic conditions.

Drobyshev, A., Atchokh, R., Atapina, N., Garipogliĭ, D., Maksimov, S., Parfenov, V., European "International Space Year" Conference, Munich, Germany, 30 March-4 April 1992. Vol.2. Remote sensing for environmental monitoring and resource management, Paris, European Space Agency, 1992, p.917-921, 11 refs.

DLC QB495.E92 1992 Vol.2

Condensation, Refractivity, Cryogenics, Equipment, Instruments, Ice cover thickness

50-625

Radiative-photochemical modeling of the annually averaged composition and temperature of the global atmosphere during the last glacial and interglacial periods.

Karol', I.L., Frol'kis, V.A., Kiselev, A.A., *Journal of geophysical research,* Apr. 20, 1995, 100(D4), p.7291-7301, 41 refs.

Atmospheric composition, Air temperature, Solar radiation, Photochemical reactions, Models

In this model reconstruction, the changes in surface air temperature and tropospheric relative humidity are prescribed, and both dry adiabatic and moist adiabatic lapse rates are used together with several other external estimates of radiative and photochemical parameters for these periods. The considerable reduction of greenhouse gas content in the atmosphere of both glacial and interglacial periods, including about a 50% reduction of stratospheric moisture in the glacial, leads to the warming of the middle and upper stratosphere by about 11 K and 4 K, in the glacial and interglacial periods, respectively. Stratospheric composition is found to be little sensitive to possible large variations of CO and NO_x surface sources. The ozone mixing ratio drops to 10-12 ppbv in the lower troposphere and increases to a maximum 6.0-7.5 ppmv in the 40 to 46 km layer, but remains almost the same as in preindustrial and in 1985 periods in the 20 to 30 km layer. This results in the approximate conservation of total ozone for all four periods considered. (Auth. mod.)

50-626

Annual cycle of stratospheric water vapor in a general circulation model.

Mote, P.W., *Journal of geophysical research,* Apr. 20, 1995, 100(D4), p.7363-7379, 57 refs.

Stratosphere, Water vapor, Atmospheric circulation, Atmospheric composition, Models

The National Center for Atmospheric Research has redesigned its GCM, the Community Climate Model (CCM2), to enable studies of the chemistry and transport of tracers including water vapor. In this study, methane is carried as a tracer and converted to water; this simple chemistry provides an adequate representation of the upper stratospheric water vapor source. The cold temperature bias in the winter polar stratosphere, which the CCM2 shares with other GCMs, produces excessive dehydration in the Southern Hemisphere, but this dry bias can be ameliorated by setting a minimum vapor pressure. The CCM2's water vapor distribution and seasonality compare favorably with observations in many respects, though seasonal variations including the upper stratospheric semiannual oscillation are generally too small. Southern polar dehydration affects mid-latitude water vapor mixing ratios by a few tenths of a part per million, mostly after the demise of the vortex. (Auth. mod.)

50-627

Modeled impacts of stratospheric ozone and water vapor perturbations with implications for high-speed civil transport aircraft.

Rind, D., Lonergan, P., *Journal of geophysical research,* Apr. 20, 1995, 100(D4), p.7381-7396, 21 refs.

Stratosphere, Water vapor, Ozone, Clouds (meteorology), Aircraft, Fuels

Ozone and water vapor perturbations are explored in a series of experiments with the Goddard Institute for Space Studies climate/middle atmosphere model. In the model calculations, varying amounts of ozone and water vapor are manipulated through several regions of the troposphere and stratosphere, including both polar latitudes. The effects of these manipulations are pointed out and described. Overall, the experiments emphasize that stratospheric changes affect tropospheric dynamics in the model; that tropospheric changes can affect stratospheric dynamics, and that tropospheric feedback processes and natural variability are important when assessing the climatic response to aircraft emissions. (Auth. mod.)

50-628

Challenging an ice-core paleothermometer.

MacAyeal, D.R., *Science,* Oct. 20, 1995, 270(5235), p.444-445, 10 refs.

Ice cores, Ice composition, Ice temperature, Oxygen isotopes, Greenland

50-629

Large Arctic temperature change at the Wisconsin-Holocene glacial transition.

Cuffey, K.M., Clow, G.D., Alley, R.B., Stuiver, M., Waddington, E.D., Saltus, R.W., *Science,* Oct. 20, 1995, 270(5235), p.455-458, 48 refs.

Boreholes, Ice temperature, Temperature variations, Research projects, Models, Ice mechanics, Greenland

50-630

Soil properties beneath ceanthus and pine stands in the eastern Sierra Nevada.

Johnson, D.W., *Soil Science Society of America. Journal,* May-June 1995, 59(3), p.918-924, 44 refs.

Forest soils, Watersheds, Trees (plants), Plant physiology, Ecosystems, Soil chemistry, Snowmelt, Meltwater, Chemical properties, Leaching, Ground water, Environmental impact, United States—Nevada—Sierra Nevada

50-631

Hydrocarbon gases and aromatic hydrocarbons produced by impact shock from frozen benzene: cosmochemical significance.

Mimura, K., Ohashi, M., Sugisaki, R., *Earth and planetary science letters,* July 1995, 133(3-4), p.265-269, 14 refs.

Extraterrestrial ice, Hydrocarbons, Simulation, Frozen liquids, Shock waves, Impact tests, Decomposition, Chemical analysis

50-632

Effect of chemical composition of soils on the strength and deformability of frozen saline soils.

Roman, L.T., *Soil mechanics and foundation engineering,* May 1995, 31(6), p.205-210, Translated from Osnovaniia, fundamenty i mekhanika gruntov. 12 refs.

Saline soils, Geocryology, Chemical composition, Frozen ground strength, Frozen ground mechanics, Soil temperature, Soil freezing, Deformation, Freezing points, Analysis (mathematics)

50-633

On the concentrations of O_2, N_2, and Ar in trapped gases from ice cores.

Bender, M., Sowers, T., Lipenkov, V.IA., *Journal of geophysical research,* Sep. 20, 1995, 100(D9), p.18,651-18,660, 32 refs.

Ice sheets, Ice cores, Sampling, Bubbles, Ice composition, Isotope analysis, Gases, Diffusion, Atmospheric composition, Correlation, Accuracy, Antarctica—Vostok Station, Antarctica—Amundsen-Scott Station, Greenland—Summit

This paper presents data on the relative concentration and isotopic composition of O_2, N_2, and Ar in gases trapped in bubbles of polar ice. O_2/N_2 and Ar/N_2 ratios are generally lower than their atmospheric values, with O_2 depletions greater than those of Ar. In samples whose $O_2/Ar/N_2$ ratios are highly anomalous with respect to modern air, $\delta^{18}O$ of O_2 may be enriched by 0.1-0.2 per mill. There is no indication that $\delta^{15}N$ of N_2 is enriched by gas loss processes in any of the samples studied. The data suggest that anomalies in the composition of air in bubbles with respect to the modern atmosphere are due to gas loss from ice during and after coring by a process which fractionates elements according to their molecular diameter rather than according to their diffusivity. (Auth. mod.)

50-634

Diel variations of H_2O_2 in Greenland: a discussion of the cause and effect relationship.

Bales, R.C., et al, *Journal of geophysical research,* Sep. 20, 1995, 100(D9), p.18,661-18,668, 13 refs.

Ice sheets, Snow air interface, Snow surface, Snow physics, Sampling, Snow composition, Atmospheric composition, Vapor transfer, Diurnal variations, Greenland—Summit

50-635

Sulfuric acid monohydrate: formation and heterogeneous chemistry in the stratosphere.

Zhang, R.Y., Leu, M.T., Keyser, L.F., *Journal of geophysical research,* Sep. 20, 1995, 100(D9), p.18,845-18,854, 43 refs.

Polar atmospheres, Climatology, Stratosphere, Atmospheric attenuation, Heterogeneous nucleation, Aerosols, Hydrates, Ice vapor interface, Freezing points, Thermodynamic properties, Cloud physics, Simulation

This study investigates some thermodynamic properties (i.e., freezing/melting points) and heterogeneous chemistry of sulfuric acid monohydrate (SAM, $H_2SO_4 \cdot H_2O$), using a fast flow reactor coupled

to a quadrupole mass spectrometer. The freezing point observations of thin liquid sulfuric acid films show that for acid contents between 75 and 85 wt % the monohydrate crystallizes readily at temperatures between 220 and 240 K on a glass substrate. For a constant H_2O partial pressure, lowering the temperature causes SAM to melt when the temperature and water partial pressure conditions are out of its stability regime. The reaction probability measurements indicate that the hydrolysis of N_2O_5 is significantly suppressed owing to the formation of crystalline SAM: the reaction probability on water-rich SAM (with higher relative humidity, or RH) is of the order of 10^{-3} at 210 K and decreases by more than an order of magnitude for the acid-rich form (with lower RH). These reported values on crystalline SAM are much smaller than those on liquid solutions. No enhancement of these reactions is observed in the presence of HCl vapor at the stratospheric concentrations. (Auth. mod.)

50-636

Origin of present-day antarctic precipitation from surface snow deuterium excess data.

Ciais, P., White, J.W.C., Jouzel, J., Petit, J.R., *Journal of geophysical research,* Sep. 20, 1995, 100(D9), p.18,917-18,927, 40 refs.

Precipitation (meteorology), Polar atmospheres, Atmospheric composition, Ice sheets, Snow composition, Sampling, Isotope analysis, Periodic variations, Snow air interface, Snow evaporation, Moisture transfer, Antarctica—Amundsen-Scott Station, Antarctica—Adélie Coast

The deuterium excess (*d*) is defined as a linear combination of the D/H and $^{18}O/^{16}O$ ratios in natural waters. This paper presents an interpretation of deuterium excess data in surface antarctic snow, using an isotopic model to derive information on the origin of present-day antarctic precipitation. The data come from near the coast (D47, Adélie Land) and from inland (South Pole, 1000 km from the sea). The one-dimensional isotopic model belongs to the Rayleigh family but fully accounts for mixed cloud processes between 0°C and -30°C. Modeling *d* in polar snowfalls meets the problem of a large sensitivity to the saturation conditions prevailing at snow formation. Both inland and near the coast, the model can simulate the observed phase between *d* and δ in snow and moisture of subtropical origin (40°-20°S). Results support a distant vapor source for large-scale precipitation delivered to the antarctic continent. (Auth. mod.)

50-637

Observing the icy Jovian satellites with the Galileo photopolarimeter radiometer instrument.

Tamppari, L.K., Spencer, J.R., Martin, T.Z., *Journal of geophysical research,* Sep. 25, 1995, 100(E9), p.18,973-18,983, 29 refs.

Extraterrestrial ice, Satellites (natural), Regolith, Remote sensing, Spaceborne photography, Radiometry, Solar radiation, Polarization (waves), Reflectivity

50-638

Changes in North Atlantic deep-water formation associated with the Heinrich events.

Maslin, M.A., *Naturwissenschaften,* July 1995, 82(7), p.330-333, 37 refs.

Oceanography, Paleoclimatology, Climatic changes, Ice sheets, Marine deposits, Ice rafting, Heat flux, Glacier oscillation, Meltwater, Ice cover effect

50-639

Modeling the surface heat flux response to long-lived SST anomalies in the North Atlantic.

Power, S.B., Kleeman, R., Colman, R.A., McAvaney, B.J., *Journal of climate,* Sep. 1995, 8(9), p.2161-2180, 65 refs.

Climatology, Oceanography, Advection, Climatic changes, Air temperature, Surface temperature, Temperature variations, Air ice water interaction, Heat flux, Sea ice distribution, Ice cover effect, Mathematical models

50-640

Comments on the Climax I and II experiments including replies to Rangno and Hobbs.

Mielke, P.W., Jr., Rangno, A.L., Hobbs, P.V., *Journal of applied meteorology,* May 1995, 34(5), p.1228-1238, 41 refs. For paper under discussion see 48-2369. Includes reply.

Precipitation (meteorology), Cloud physics, Weather modification, Cloud seeding, Statistical analysis, Design, Correlation

50-641

Small ice cap instability in the presence of fluctuations.

Lee, W.H., North, G.R., *Climate dynamics,* May 1995, 11(4), p.242-246, 15 refs.

Glaciology, Climatology, Ice sheets, Stability, Ice edge, Albedo, Climatic changes, Simulation, Heat balance, Heat flux, Ice air interface, Temperature effects

50-642

CO_2-induced thickening/thinning of the Greenland and antarctic ice sheets as simulated by a GCM (CCM1) and an ice-sheet model.

Verbitskiĭ, M.IA., Oglesby, R.J., *Climate dynamics,* May 1995, 11(4), p.247-253, 26 refs.

Ice sheets, Glacier mass balance, Glacier thickness, Periodic variations, Climatic changes, Carbon dioxide, Ice air interface, Snow accumulation, Mathematical models, Simulation

The mean thickness of an ice sheet depends on the product of two poorly known quantities, the ice viscosity and the net snow accumulation rate. In this study, the viscosity of an ice sheet is adjusted in order to get a consistent value of this product for the present-day ice sheet volume and area, given the net snow accumulation rate calculated by an atmospheric general circulation model (GCM). This artificial rheology constant is maintained in further numerical experiments to compensate for systematic GCM errors in simulating the snow accumulation rate, and, therefore, thickening/thinning of ice sheets will depend mostly on the tendency in the net accumulation change rather than on its absolute value. Using this approach, the response of the Greenland and antarctic ice sheets to doubling CO_2 concentration is simulated and the horizontal distribution of possible thickening/thinning of polar ice obtained. It is found that initially, the region of thickening ice is close to the area of increased snowfall rate, but later it significantly changes under the influence of internal ice flow dynamics. (Auth. mod.)

50-643

Sulfate deposition over the Arctic Ocean.

Smith, L., *Ecological applications,* Feb. 1995, 5(1), p.1, 5 refs.

Climatology, Atmospheric composition, Aerosols, Air pollution, Ecosystems, Sedimentation, Arctic Ocean

50-644

Sorption of nonpolar organic vapors by ice and snow.

Hoff, J.T., Wania, F., Mackay, D., Gillham, R., *Environmental science & technology,* Aug. 1995, 29(8), p.1982-1989, 60 refs.

Air pollution, Simulation, Falling snow, Snow physics, Ice vapor interface, Hydrocarbons, Aerosols, Absorption, Scavenging

50-645

Permafrost mounds in Lapland and Spitzbergen—science report II. [Permafrosthügel in Lappland und Spitzbergen - ein Forschungsbericht II]

Meier, K.D., *Natur und Museum,* Jan. 1989, 119(1), p.9-26, In German. Numerous refs.

Permafrost structure, Discontinuous permafrost, Pingos, Frost mounds, Lapland, Norway—Spitsbergen

50-646

Life in a crystalline labyrinth—polar sea ice and its inhabitants. [Leben im gläsernen Labyrinth - polares Meereis und seine Bewohner]

Dahms, H.U., *Natur und Museum,* Jan. 1992, 122(1), p.17-34, In German. Refs. passim.

DLC QH5.S4

Sea ice, Marine biology, Microbiology, Ice salinity, Ecology, Algae

Following a brief review of research history of the biology of antarctic microscopic life in sea ice, the advent of the *Polarstern* expeditions in 1971, and the accompanying citations over a period of 150 years prior to 1990, various opportunities which opened for investigation are considered. These include the annual freeze/melt cycle and the resulting areas covered by sea ice in its various forms; sea ice as a living space and the forms which occupy the space; the adaptations that creatures have made to survive in this extreme habitat; the food availability to sustain the ice populations; and a brief comparison of arctic and antarctic biota.

50-647

Frazil evolution in channels.

Hammar, L., Shen, H.T., *Journal of hydraulic research,* 1995, 33(3), p.291-306, With French summary. 18 refs.

River ice, Channels (waterways), Turbulent flow, Frazil ice, Ice formation, Ice crystal growth, Nucleation rate, Heat loss, Particle size distribution, Water temperature, Mathematical models

50-648

Meteorological support for navigation along the Northern Sea Route.

Kondrat'ev, K.IA., Melent'ev, V.V., Bobylev, L.P., Johannessen, O.M., Sandven, S., Petterssen, L.H., *Polar geography and geology,* Oct.-Dec. 1994, 18(4), p.327-343, 8 refs.

Oceanography, Marine transportation, Remote sensing, Ice navigation, Sea ice distribution, Ice conditions, Ice reporting, Seasonal variations, Spaceborne photography, Side looking radar, Synthetic aperture radar, Arctic Ocean, Russia—Pechora Sea, Russia—Kara Sea, Northern Sea Route

50-649

Radiocarbon dating evidence for mammoths on Wrangel Island, Arctic Ocean, until 2000 BC.

Vartanian, S.L., Arslanov, Kh.A., Tertichnaia, T.V., Chernov, S.B., *Radiocarbon,* 1995, 37(1), p.1-6, 15 refs.

Arctic landscapes, Pleistocene, Sediments, Frozen ground, Quaternary deposits, Sampling, Radioactive age determination, Ecology, Russia—Wrangel Island

50-650

Mammoth extinction: two continents and Wrangel Island.

Martin, P.S., Stuart, A.J., *Radiocarbon,* 1995, 37(1), p.7-10, 16 refs.

Arctic landscapes, Pleistocene, Ecology, Quaternary deposits, Sediments, Sampling, Radioactive age determination, Russia—Wrangel Island

50-651

Environmental factors influencing the biodegradation of petroleum hydrocarbons in cold seawater.

Siron, R., Pelletier, É., Brochu, C., *Archives of environmental contamination and toxicology,* May 1995, 28(4), p.406-416, 47 refs.

Oceanography, Marine biology, Microbiology, Water pollution, Oil spills, Crude oil, Bacteria, Degradation, Ice water interface, Ice cover effect, Water temperature, Temperature effects, Simulation, Environmental tests

50-652

Formation of amino acid precursors in cometary ice environments by cosmic radiation.

Kobayashi, K., et al, *Advances in space research,* 1995, 16(2), COSPAR Symposium on Prebiotic Chemistry in Space, Hamburg, Germany, July 11-21, 1994. Proceedings. Edited by Levasseur-Regourd, A.C. et al, p.(2)21-(2)26, 15 refs.

Extraterrestrial ice, Ice physics, Simulation, Gamma irradiation, Ice spectroscopy, Geochemistry, Hydrocarbons, Photochemical reactions

50-653

Formation of organic molecules in astronomical ices.

Schutte, W.A., *Advances in space research,* 1995, 16(2), COSPAR Symposium on Prebiotic Chemistry in Space, Hamburg, Germany, July 11-21, 1994. Proceedings. Edited by Levasseur-Regourd, A.C. et al, p.(2)53-(2)60, 20 refs.

Extraterrestrial ice, Cosmic dust, Ice physics, Geochemistry, Chemical composition, Hydrocarbons, Simulation, Ultraviolet radiation, Ice sublimation, Photochemical reactions

50-654

Radiation chemistry of ices of planetological interest at low temperature.

Strazzulla, G., *Advances in space research,* 1995, 16(2), COSPAR Symposium on Prebiotic Chemistry in Space, Hamburg, Germany, July 11-21, 1994. Proceedings. Edited by Levasseur-Regourd, A.C. et al, p.(2)61-(2)71, 41 refs.

Extraterrestrial ice, Ice physics, Simulation, Radiation absorption, Ionization, Ice spectroscopy, Infrared spectroscopy, Phase transformations, Geochemistry, Hydrocarbons

50-655

Electrolytical processes in dirty ices: implications for origin and chemistry of minor bodies and related objects.

Drobyshevskiĭ, E.M., Chesnakov, V.A., Sinitsyn, V.V., *Advances in space research,* 1995, 16(2), COSPAR Symposium on Prebiotic Chemistry in Space, Hamburg, Germany, July 11-21, 1994. Proceedings. Edited by Levasseur-Regourd, A.C. et al, p.(2)73-(2)84, 39 refs.

Extraterrestrial ice, Satellites (natural), Geochemistry, Regolith, Ice physics, Ground ice, Explosion effects, Ice electrical properties, Atmospheric electricity, Geoelectricity

50-656

Infrared spectroscopy of organics of planetological interest at low temperatures.

Khanna, R.K., *Advances in space research,* 1995, 16(2), COSPAR Symposium on Prebiotic Chemistry in Space, Hamburg, Germany, July 11-21, 1994. Proceedings. Edited by Levasseur-Regourd, A.C. et al, p.(2)109-(2)118, 17 refs.

Extraterrestrial ice, Ice spectroscopy, Infrared spectroscopy, Hydrocarbons, Geochemistry, Satellites (natural), Simulation, Photochemical reactions, Temperature effects, Spectra

50-657

Plasma desorption mass spectrometry study of $CH+_n$ and C_2H+_n ion formation from frozen organic surfaces.

Betts, R.L., da Silveira, E.F., Schweikert, E.A., *International journal of mass spectrometry and ion processes,* July 21, 1995, 145(1-2), p.9-23, 28 refs.

Hydrocarbons, Ion exchange, Frozen liquids, Ice spectroscopy, Decomposition, Molecular structure, Spectra, Photochemical reactions, Thermodynamics

50-658

Late Quaternary paleoceanography of the Eurasian Basin, Arctic Ocean.

Cronin, T.M., Holtz, T.R., Jr., Stein, R., Spielhagen, R., Fütterer, D., Wollenburg, J., *Paleoceanography,* Apr. 1995, 10(2), p.259-281, 57 refs.

Oceanography, Pleistocene, Paleoecology, Marine deposits, Quaternary deposits, Age determination, Stratigraphy, Isotope analysis, Ocean currents, Arctic Ocean

50-659

Danish Polar Center annual report, 1994.

Dansk Polarcenter, Copenhagen, 1995, 36p., Refs. p.34-36.

Research projects, Cold weather operation, Logistics, International cooperation, Exploration, Greenland

50-660

Subglacial topography in the central Sør Rondane Mountains, East Antarctica: configuration and morphometric analysis of valley cross profiles.

Pattyn, F., Decleir, H., *Antarctic record,* Mar. 1995, 39(1), p.1-24, With Japanese summary. 19 refs.

Topographic maps, Glacier thickness, Radio echo soundings, Bottom topography, Antarctica—Sør Rondane Mountains

An overview is given of all subglacial topography measurements carried out in the central Sør Rondane Mountains. Data of glacier valley cross and longitudinal profiles were obtained by gravimeter and radio echo soundings during Belgian expeditions and during JARE-28 and JARE-32. Based on these data, a map of the subglacial topography in the central mountain area was compiled. A method is presented for analyzing the morphometric characteristics of valley glacier cross profiles, which is shown to give better results than former power law equations. The morphometric analysis of the present glacierized valley cross profiles revealed a complex development regime, linked with the erosion potential of the glaciated area. (Auth. mod.)

50-661

Report of "Workshop on the Glaciological Technology in Polar Regions".

Kamiyama, K., *Antarctic record,* Mar. 1995, 39(1), p.68-73, In Japanese with English summary.

Low temperature research, Glaciology, Instruments, Ice drills, Polar regions

A workshop on Glaciological Technology in Polar Regions was organized to discuss recent progress in glaciological technology, including observation and analytical methods. Several techniques, including those of other disciplines such as deep drilling of the oceanic floor, were introduced for the future development of glaciological observations. Electrical support for automatic data logging instruments is important in a remote area under an extremely low temperature environment. Glaciological observations should be combined with information obtained from satellites. The discussion suggests that glaciologists would find it useful to develop and combine some techniques in order to understand glaciers more clearly. Some difficulties that should be overcome in the near future were also discussed. (Auth.)

50-662

Microwave emission from polar firn.

West, R.D., Seattle, University of Washington, 1994, 85p., University Microfilms order No.DA9509422, Ph.D. thesis. 49 refs.

Glacier surveys, Ice sheets, Firn stratification, Snow ice interface, Glacier ice, Ice temperature, Ice density, Ice structure, Radiometry, Spaceborne photography

The effects of layered structure and dense distributions of spherical ice grains on microwave emission from arctic and antarctic polar firn are studied. High spatial correlations between satellite emission measurements and important geophysical quantities such as temperature and snow accumulation rate were found. At lower frequencies such as 5 GHz, the dominant scattering mechanism affecting microwave emission from polar firn is reflection from hundreds of layer interfaces. The layered structure of firn is described by a stochastic model which generates centimeter scale discrete layers of varying density. Layer scattering reduces emission, and increases the polarization contrast (i.e., the difference between vertically and horizontally polarized emission). At higher frequencies such as 37 GHz, the dominant scattering influence is volume scattering by the ice particles. The size distribution of ice particles is particularly important in determining the emissivity of firn at 37 GHz. Particle scattering reduces emission, and also reduces the polarization contrast. The combination of particle and layer scattering creates a minimum in horizontally polarized emission as a function of frequency. (Auth. mod.)

50-663

Vendian glaciations and their relation to the dispersal of Rodinia: paleomagnetic constraints.

Torsvik, T.H., Lohmann, K.C., Sturt, B.A., *Geology,* Aug. 1995, 23(8), p.727-730, 24 refs.

Pleistocene, Glaciation, Marine deposits, Geomagnetism, Remanent magnetism, Geological surveys, Continental drift, Geochronology, Correlation, Norway

50-664

Permafrost in China: past and present.

Qiu, G.Q., Cheng, G.D., *Permafrost and periglacial processes,* Jan.-Mar. 1995, 6(1), p.3-14, With French summary. 27 refs.

Permafrost surveys, Permafrost distribution, Permafrost transformation, Geocryology, Ice wedges, Climatic factors, China

50-665

Active patterned ground and cryoturbation on Muckish Mountain, Co. Donegal, Ireland.

Wilson, P., Sellier, D., *Permafrost and periglacial processes,* Jan.-Mar. 1995, 6(1), p.15-25, With French summary. 43 refs.

Periglacial processes, Geocryology, Soil surveys, Geomorphology, Cryoturbation, Patterned ground, Classifications, Frost action, Frost heave, Lithology, United Kingdom—Northern Ireland

50-666

Permafrost distribution in the southern circumpolar region and its relation to the environment: a review and recommendations for further research.

Bockheim, J.G., *Permafrost and periglacial processes,* Jan.-Mar. 1995, 6(1), p.27-45, With French summary. Refs. p.40-45.

Permafrost surveys, Permafrost thickness, Permafrost distribution, Permafrost transformation, Ground ice, Patterned ground, Periglacial processes, Climatic factors, Geocryology, Geochemistry

Permafrost is pervasive in ice-free areas of Antarctica and its offshore islands but is lacking in the subantarctic islands, except possibly at the higher elevations. Based on limited data, the thickness of permafrost ranges from 100 to 1000 m in ice-free areas of Antarctica. The thickness of the active layer ranges between 50 and 150 cm in the antarctic islands and maritime East Antarctica and 15 to 50 cm in interior Antarctica. Ground ice is restricted to rock glaciers and ice wedges; the rock glaciers, palsa and thermokarst reported in some areas originate from ice-cored drift and not permafrost. Active and inactive patterned ground occurs throughout the region. Whereas sorted circles, nets, and stripes are common in the antarctic islands and in maritime East Antarctica, ice- and sand-wedge polygons are prevalent in ice-free valleys of Antarctica. Altiplanation terraces may exist in the antarctic islands and in maritime East Antarctica; however, landforms in interior Antarctica are controlled more by salt weathering than by cryogenic processes. (Auth. mod.)

50-667

Periodic water saturation of ice wedges: results of an oxygen-18 and deuterium study. [Systématique du remplissage en eau des fentes de gel: les résultats d'une étude oxygène-18 et deutérium]

Lauriol, B., Duchesne, C., Clark, I.D., *Permafrost and periglacial processes,* Jan.-Mar. 1995, 6(1), p.47-55, In French with English summary. 18 refs.

Geocryology, Pleistocene, Periglacial processes, Ground ice, Ice wedges, Saturation, Ice water interface, Radioactive age determination, Isotope analysis, Snowmelt, Permafrost hydrology

50-668

Suprapermafrost groundwater seepage in gravelly terrain, Resolute, NWT, Canada.

Woo, M.K., Xia, Z.J., *Permafrost and periglacial processes,* Jan.-Mar. 1995, 6(1), p.57-62, With French summary. 18 refs.

Permafrost hydrology, Wetlands, Water table, Periglacial processes, Suprapermafrost ground water, Seepage, Subsurface drainage, Snowmelt, Gravel, Water balance, Geomorphology, Canada—Northwest Territories—Resolute

50-669

Mountain permafrost and slope instability in the Italian Alps: the Val Pola landslide.

Dramis, F., Govi, M., Guglielmin, M., Mortara, G., *Permafrost and periglacial processes,* Jan.-Mar. 1995, 6(1), p.73-82, With French summary. 33 refs.

Alpine landscapes, Mountain soils, Slope processes, Geomorphology, Landslides, Periglacial processes, Rock glaciers, Permafrost mass transfer, Permafrost transformation, Degradation, Ground thawing, Mass movements (geology), Italy—Alps

50-670

Formation and discharge of deep and bottom water in the northwestern Weddell Sea.

Fahrbach, E., Rohardt, G., Scheele, N., Schröder, M., Strass, V., Wisotzki, A., *Journal of marine research,* July 1995, 53(4), p.515-538, 38 refs.

Oceanography, Ocean currents, Hydrography, Salinity, Water temperature, Oceanographic surveys, Antarctica—Weddell Sea

Deep and bottom water formation in the Weddell Sea is the major source of the bottom water of the world ocean. Measurements made in the northwestern Weddell Sea between 1989 and 1993 during the Weddell Gyre Study indicate that the outflow of young bottom water with the western boundary current of the Weddell Gyre is dominated by a rather fresh water mass which obtains its thermohaline characteristics by mixing of deep water with a flow from the shelf in front of the Larsen Ice Shelf. The more saline source water mass, which is necessary to maintain the thermohaline properties of the Weddell Sea Deep Water, is less prominent in the bottom water outflow. The transport of bottom water with the western boundary current of the Weddell Gyre ranges from 1 to 4×10^6 m^3/s. The outflow is subject to a seasonal cycle with minimum temperatures and maximum velocities in early austral winter. (Auth.)

50-671
Study of the impact of doubling carbon dioxide and solar radiation variations on the climate system.
Chu, S.P., Houston, Rice University, 1994, 153p., University Microfilms order No.DA9514170, Ph.D. thesis. For abstract see Dissertation abstracts international, Sec.B, June 1995, 55(12), p.5384.
Ice age theory, Ice sheets, Glaciation, Glacier formation, Air ice water interaction, Global warming, Carbon dioxide, Insolation

50-672
Alpine glacial history reconstruction: 1. Application of the cosmogenic beryllium-10 exposure age method to determine the glacial chronology of the Wind River Mountains, Wyoming, United States of America. 2. Relative dating of Quaternary deposits in the Rio Atuel Valley, Mendoza, Argentina.
Gosse, J.C., Bethlehem, PA, Lehigh University, 1994, 183p., University Microfilms order No.DA9513115, Ph.D. thesis. For abstract see Dissertation abstracts international, Sec.B, June 1995, 55(12), p.5252.
Alpine glaciation, Glacial geology, Glacier oscillation, Glacial deposits, Quaternary deposits, Moraines, Snow line, Soil dating, Geochronology, Paleoclimatology, United States—Wyoming, Argentina

50-673
Observational studies and numerical simulations of marine convective boundary layers.
Rao, G.S., Lafayette, IN, Purdue University, 1994, 142p., University Microfilms order No.DA9513049, Ph.D. thesis. For abstract see Dissertation abstracts international, Sec.B, June 1995, 55(12), p.5387.
Lake effects, Air water interactions, Cloud physics, Snowstorms, Turbulent boundary layer, Convection, United States—Michigan, Lake

50-674
Nature of freezing resistance in the stem pith of cabbage (*Brassica oleracea* var. *capitata*).
Manley, R.C., Pullman, Washington State University, 1994, 298p., University Microfilms order No.DA9512764, Ph.D. thesis. For abstract see Dissertation abstracts international, Sec.B, June 1995, 55(12), p.5154.
Plant physiology, Plant tissues, Frost resistance, Cold tolerance

50-675
Effects of precipitation and river runoff anomalies in a coupled ice-ocean model of the Arctic.
Weatherly, J.W., Urbana-Champaign, University of Illinois, 1994, 137p., University Microfilms order No.DA9512589, Ph.D. thesis. For abstract see Dissertation abstracts international, Sec.B, June 1995, 55(12), p.5388.
Sea ice distribution, Ice cover thickness, Ice water interface, Drift, Ice models, Ice forecasting, River flow, Runoff, Precipitation (meteorology)

50-676
Molecular modeling studies of the structure and function of a winter flounder antifreeze polypeptide.
McDonald, S.M., Ithaca, NY, Cornell University, 1995, 531p., University Microfilms order No.DA9511931, Ph.D. thesis. For abstract see Dissertation abstracts international, Sec.B, June 1995, 55(12), p.5461.
Antifreezes, Chemical ice prevention, Cryobiology, Physiological effects, Molecular structure

50-677
Meteorological investigation of ozone anomalies during the Arctic Boundary Layer Experiment (ABLE 3A).
Smarsh, D.A., Atlanta, Georgia Institute of Technology, 1994, 246p., University Microfilms order No.DA9511615, Ph.D. thesis. For abstract see Dissertation abstracts international, Sec.B, June 1995, 55(12), p.5388.
Polar atmospheres, Atmospheric circulation, Atmospheric composition, Ozone

50-678
Heat transfer resulting from a turbulent, submerged jet impinging on a phase change material.
Bhansali, A.P., Atlanta, Georgia Institute of Technology, 1994, 209p., University Microfilms order No.DA9511566, Ph.D. thesis. For abstract see Dissertation abstracts international, Sec.B, June 1995, 55(12), p.5528.
Ice bottom surface, Ice water interface, Ice thermal properties, Ice heat flux, Ice melting, Hydraulic jets, Turbulent flow, Heat transfer, Mathematical models

50-679
Historical snow cover in the Great Plains, United States: implications for its use as an indicator of natural and anthropogenic climate change.
Hughes, M.G., New Brunswick, Rutgers State University of New Jersey, 1994, 222p., University Microfilms order No.DA9511486, Ph.D. thesis. For abstract see Dissertation abstracts international, Sec.B, June 1995, 55(12), p.5260.
Snow cover distribution, Snowfall, Snow air interface, Climatic changes, United States—Great Plains

50-680
Laboratory studies of astrophysical ices.
Dissly, R.W., Pasadena, California Institute of Technology, 1994, 148p., University Microfilms order No.DA9509972, Ph.D. thesis. For abstract see Dissertation abstracts international, Sec.B, May 1995, 55(11), p.4896.
Planetary environments, Satellites (natural), Extraterrestrial ice, Ice sublimation, Ice vapor interface, Environment simulation

50-681
Interannual variability of the Asian summer monsoon and its relationships with ENSO and Eurasian snow cover.
Li, C.F., Los Angeles, University of California, 1994, 221p., University Microfilms order No.DA9509890, Ph.D. thesis. For abstract see Dissertation abstracts international, Sec.B, May 1995, 55(11), p.4901.
Atmospheric circulation, Marine atmospheres, Marine meteorology, Air water interactions, Snow cover distribution, Snow cover effect, Snow air interface

50-682
Seasonal nitrogen cycles on Triton and Pluto.
Hansen, C.J., Los Angeles, University of California, 1994, 212p., University Microfilms order No.DA9509888, Ph.D. thesis. For abstract see Dissertation abstracts international, Sec.B, May 1995, 55(11), p.4897.
Planetary environments, Satellites (natural), Extraterrestrial ice, Ice sublimation, Ice vapor interface

50-683
Laboratory investigation of microwave backscattering from non-tenuous dense media with and without rough surface boundaries.
Porco, R.L., Arlington, University of Texas, 1994, 238p., University Microfilms order No.DA9509736, Ph.D. thesis. For abstract see Dissertation abstracts international, Sec.B, May 1995, 55(11), p.5006.
Ice surveys, Ice surface, Salt ice, Ice detection, Backscattering, Radio echo soundings, Radar echoes, Environmental tests

50-684
Arctic process and climate studies with the TOVS satellite sounder.
Francis, J.A., Seattle, University of Washington, 1994, 129p., University Microfilms order No.DA9509345, Ph.D. thesis. For abstract see Dissertation abstracts international, Sec.B, May 1995, 55(11), p.4900.
Polar atmospheres, Marine meteorology, Heat balance, Heat flux, Cloud cover, Air temperature, Surface temperature, Radiometry, Radio echo soundings, Spaceborne photography

50-685
Carbon fiber-reinforced concrete as a strain/stress sensor and high performance civil structure material.
Chen, P.W., Buffalo, State University of New York, 1994, 353p., University Microfilms order No.DA9509099, Ph.D. thesis. For abstract see Dissertation abstracts international, Sec.B, May 1955, 55(11), p.5023.
Reinforced concretes, Concrete durability, Composite materials, Concrete strength, Frost resistance, Freeze thaw tests

50-686
Wintertime precipitation enhancement opportunities in the Great Dividing Range of southeastern Australia.
Carter, E.J., Reno, University of Nevada, 1994, 508p., University Microfilms order No.DA9509035, Ph.D. thesis. For abstract see Dissertation abstracts international, Sec.B, May 1995, 55(11), p.4900.
Snowstorms, Cloud seeding, Weather modification, Artificial snow, Artificial precipitation, Cloud physics, Australia

50-687
Durability of cement-bonded particleboard made conventionally and with carbon dioxide injection.
De Souza, M.R., 135p., University Microfilms order No.DA9508764, Ph.D. thesis. For abstract see Dissertation abstracts international, Sec.B, May 1995, 55(11), p.4663.
Wood, Composite materials, Construction materials, Freeze thaw tests, Cold weather performance

50-688
Physiochemical properties and partitioning of organochlorine compounds in air and water.
Falconer, R.L.M., Columbia, University of South Carolina, 1994, 187p., University Microfilms order No.DA9508128, Ph.D. thesis. For abstract see Dissertation abstracts international, Sec.B, May 1995, 55(11), p.4815.
Polar atmospheres, Air pollution, Water pollution, Atmospheric composition, Snow air interface, Scavenging, Air water interactions, Water chemistry

50-689
Environmental controls on sphagnum photosynthesis and net primary production in arctic Alaska, United States of America.
Murray, K.J., Reno, University of Nevada, 1994, 50p., University Microfilms order No.DA9432828, Ph.D. thesis. For abstract see Dissertation abstracts international, Sec.B, Jan. 1995, 55(7), p.2501.
Tundra vegetation, Tundra climate, Plant ecology, Mosses, Photosynthesis, Biomass, United States—Alaska—North Slope

50-690
3.5-cm radar investigation of Mars and Mercury: planetological implications.
Butler, B.J., 290p., University Microfilms order No.DA9431821, Ph.D. thesis. For abstract see Dissertation abstracts international, Sec.B, Jan. 1995, 55(7), p.2788.
Planetary environments, Extraterrestrial ice, Ice detection, Radar photography

50-691
Experimental and analytical investigation of fluid flow and heat transfer interactions with solidification of a liquid jet impinging onto a horizontal surface.
Naraghi, M.N., Brooklyn, NY, Polytechnic University, 1994, 134p., University Microfilms order No.DA9431739, Ph.D. thesis. For abstract see Dissertation abstracts international, Sec.B, Jan. 1995, 55(7), p.2975.
Pipeline freezing, Ice solid interface, Ice formation, Ice accretion, Ice solid interface, Liquid solid interfaces, Hydraulic jets, Pipe flow, Heat transfer

50-692

Thermal infrared remote sensing of particulate surfaces.

Wald, A.E., Baltimore, MD, Johns Hopkins University, 1994, 236p., University Microfilms order No.DA9431729, Ph.D. thesis. For abstract see Dissertation abstracts international, Sec.B, Jan. 1995, 55(7), p.2602.

Snow surface, Snow optics, Snow air interface, Snow heat flux, Infrared radiation, Radiometry, Remote sensing

50-693

Glacial geomorphology and dynamics of the Wisconsin Valley Lobe of the Laurentide Ice Sheet, Lincoln County, Wisconsin.

Ham, N.R., Madison, University of Wisconsin, 1994, 251p., University Microfilms order No.DA9431449, Ph.D. thesis. For abstract see Dissertation abstracts international, Sec.B, Jan. 1995, 55(7), p.2606.

Ice sheets, Glaciation, Glacial geology, Glacier oscillation, Moraines, Geomorphology, Paleoclimatology, United States—Wisconsin

50-694

Grounding-line systems and glacier mass balance of modern temperate glaciers and their effect on glacier stability.

Hunter, L.E., De Kalb, Northern Illinois University, 1994, 499p., University Microfilms order No.DA9430241, Ph.D. thesis. For abstract see Dissertation abstracts international, Sec.B, Jan. 1995, 55(7), p.2606.

Glacier oscillation, Glacier mass balance, Glacial meteorology, Glacier alimentation, Glacial erosion, Glacial deposits, Moraines, Calving, Sediment transport, Bottom sediment, Marine geology, United States—Alaska—Glacier Bay

50-695

Sediment yields, lithofacies architecture and mudrock characteristics in glacimarine environments.

Cai, J.K., De Kalb, Northern Illinois University, 1994, 466p., University Microfilms order No.DA9430224, Ph.D. thesis. For abstract see Dissertation abstracts international, Sec.B, Jan. 1995, 55(7), p.2603.

Glacial deposits, Glacier oscillation, Glacial erosion, Glacial till, Ice rafting, Marine deposits, Bottom sediment, Sediment transport, United States—Alaska—Glacier Bay

50-696

Application of linear elastic fracture mechanics to some problems of fracture propagation in rock and ice.

Fischer, M.P., University Park, Pennsylvania State University, 1994, 253p., University Microfilms order No.DA9428096, Ph.D. thesis. For abstract see Dissertation abstracts international, Sec.B, Dec. 1994, 55(6), p.2132.

Ice strength, Ice elasticity, Ice deformation, Ice cracks, Rock mechanics, Crack propagation

50-697

Thermal and structural properties of vapor deposited water ice: effect of ion bombardment and astrophysical implications.

Sack, N.J., Charlottesville, University of Virginia, 1992, 155p., University Microfilms order No.DA9424463, Ph.D. thesis. For abstract see Dissertation abstracts international, Sec.B, Oct. 1994, 55(4), p.1501.

Extraterrestrial ice, Ice sublimation, Ice vapor interface, Ice surface, Ice growth, Ice spectroscopy, Water films, Ionization

50-698

Spatial explicit modeling of arctic tundra landscapes.

Ostendorf, B., Davis, University of California, 1994, 156p., University Microfilms order No.DA9423908, Ph.D. thesis. For abstract see Dissertation abstracts international, Sec.B, Oct. 1994, 55(4), p.1270.

Tundra vegetation, Plant ecology, Vegetation patterns, Biogeography, Topographic effects, Computerized simulation, United States—Alaska—Brooks Range

50-699

Regional scale model for meltwater generation, infiltration, and runoff from the Greenland ice sheet.

Zou, J.H., Boulder, University of Colorado, 1993, 246p., University Microfilms order No.DA9423557, Ph.D. thesis. For abstract see Dissertation abstracts international, Sec.B, Oct. 1994, 55(4), p.1599.

Ice sheets, Glacier heat balance, Glacier mass balance, Glacial hydrology, Glacial meteorology, Snow ice interface, Meltwater, Runoff forecasting, Computerized simulation, Global warming, Greenland

50-700

Photochemistry of atmospheric ozone cluster molecules, and bromoform emission for arctic ice algae.

Buckley, P.T., Boulder, University of Colorado, 1993, 110p., University Microfilms order No.DA9423472, Ph.D. thesis. For abstract see Dissertation abstracts international, Sec.B, Oct. 1994, 55(4), p.1404.

Polar atmospheres, Atmospheric composition, Ozone, Air water interactions, Ice cover effect, Algae, Marine biology, Nutrient cycle

50-701

Spatially distributed snowmelt-driven hydrologic model applied to the Upper Sheep Creek watershed.

Jackson, T.H.R., Logan, Utah State University, 1994, 323p., University Microfilms order No.DA9423099, Ph.D. thesis. For abstract see Dissertation abstracts international, Sec.B, Oct. 1994, 55(4), p.1556.

Snow hydrology, Snowmelt, Runoff forecasting, Stream flow, Watersheds, Computerized simulation, United States—Utah

50-702

Quaternary terraces and related deposits in the western Wind River Basin, Wyoming.

Jaworowski, C., Laramie, University of Wyoming, 1993, 268p., University Microfilms order No.DA9418676, Ph.D. thesis. For abstract see Dissertation abstracts international, Sec.B, Oct. 1994, 55(4), p.1347.

Glacial geology, Glacial deposits, Quaternary deposits, Outwash, Alluvium, Terraces, Stratigraphy, Geochronology, Paleoclimatology, United States—Wyoming

50-703

Problems in the energy supply of the Murmansk region. [Problemy energoobespecheniia Murmanskoĭ oblasti]

Stepanov, I.R., ed, Apatity, Kol'skiĭ nauchnyĭ tsentr RAN, 1992, 101p., In Russian with English table of contents. Refs. passim. For individual papers see 50-704 through 50-714.

Cold weather operation, Electric power, Economic analysis, Russia—Murmansk

50-704

Problems in energy savings and key trends in their solutions. [Problemy energosberezheniia i kliuchevye napravleniia ikh resheniia]

Elokhin, V.R., Stepanov, I.R., Problemy energoobespecheniia Murmanskoĭ oblasti (Problems in the energy supply for the Murmansk region). Edited by I.R. Stepanov, Apatity, Kol'skiĭ nauchnyĭ tsentr RAN, 1992, p.6-21, In Russian. 17 refs.

Electric power, Cold weather operation, Russia—Murmansk

50-705

Biogas as an alternative energy savings. [Biogaz kak al'ternativa energosberezheniia]

Elokhin, V.R., Problemy energoobespecheniia Murmanskoĭ oblasti (Problems in the energy supply for the Murmansk region). Edited by I.R. Stepanov, Apatity, Kol'skiĭ nauchnyĭ tsentr RAN, 1992, p.21-28, In Russian. 9 refs.

Mathematical models, Natural gas, Economic analysis, Russia—Murmansk, Russia—Irkutsk

50-706

Trends in the development of energy consumption in the Murmansk region and questions on improving the effectiveness of its energy industry. [Tendentsii v razvitii energopotrebleniia Murmanskoĭ oblasti i nekotorye voprosy povysheniia effektivnosti ee energeticheskogo khoziaĭstva]

Barannik, B.G., Zarudniaia, N.A., Kalinina, N.V., Problemy energoobespecheniia Murmanskoĭ oblasti (Problems in the energy supply for the Murmansk region). Edited by I.R. Stepanov, Apatity, Kol'skiĭ nauchnyĭ tsentr RAN, 1992, p.29-37, In Russian. 6 refs.

Electric power, Economic development, Heat balance, Russia—Murmansk

50-707

Reserves of heat supply systems. [Rezervirovanie teplosnabzhaiushchikh sistem]

Salina, S.F., Problemy energoobespecheniia Murmanskoĭ oblasti (Problems in the energy supply for the Murmansk region). Edited by I.R. Stepanov, Apatity, Kol'skiĭ nauchnyĭ tsentr RAN, 1992, p.38-45, In Russian. 3 refs.

Heating, Pipelines, Cold weather operation, Russia—Murmansk

50-708

Development of a man-machine system for hydroenergy studies on the Kola Peninsula. [Opyt razrabotki cheloveko-mashinnoĭ sistemy dlia gidroenergeticheskikh issledovaniĭ na Kol'skom poluostrove]

Marchuk, S.A., Nikitenko, V.I., Chamkaev, M.I., Problemy energoobespecheniia Murmanskoĭ oblasti (Problems in the energy supply for the Murmansk region). Edited by I.R. Stepanov, Apatity, Kol'skiĭ nauchnyĭ tsentr RAN, 1992, p.46-52, In Russian. 5 refs.

Electric power, Cold weather operation, River basins, Russia—Murmansk, Russia—Olenka River, Russia—Kola Peninsula

50-709

Principles of justification for energy complexes in isolated regions of the Kola Peninsula based on small hydroelectric stations. [Printsipy obosnovaniia energokompleksov v izolirovannykh raĭonakh Kol'skogo poluostrova na baze malykh GES]

Marchuk, S.A., Konovalova, O.E., Problemy energoobespecheniia Murmanskoĭ oblasti (Problems in the energy supply for the Murmansk region). Edited by I.R. Stepanov, Apatity, Kol'skiĭ nauchnyĭ tsentr RAN, 1992, p.52-59, In Russian. 5 refs.

Electric power, Cold weather operation, Mathematical models, Russia—Murmansk, Russia—Kola Peninsula

50-710

Prospects for the industrial use of wind power on the Kola Peninsula. [Perspektivy promyshlennogo ispol'zovaniia energii vetra na Kol'skom poluostrove]

Minin, V.A., Stepanov, I.R., IAkunina, T.I., Problemy energoobespecheniia Murmanskoĭ oblasti (Problems in the energy supply for the Murmansk region). Edited by I.R. Stepanov, Apatity, Kol'skiĭ nauchnyĭ tsentr RAN, 1992, p.60-73, In Russian. 7 refs.

Wind power generation, Electric power, Economic analysis, Cold weather operation, Russia—Kola Peninsula, Russia—Dalnye Zelentsy, Russia—Murmansk

50-711

Prospects for using solar energy in the Murmansk region. [Perspektivy ispol'zovaniia solnechnoĭ energii v Murmanskoĭ oblasti]

Minin, V.A., IAkunina, T.I., Korobko, I.L., Problemy energoobespecheniia Murmanskoĭ oblasti (Problems in the energy supply for the Murmansk region). Edited by I.R. Stepanov, Apatity, Kol'skiĭ nauchnyĭ tsentr RAN, 1992, p.73-81, In Russian. 9 refs.

Solar radiation, Electric power, Cold weather operation, Russia—Murmansk

50-712

Set of programs for integrated analysis of the dynamics of and prospects for energy supply in an industrial center. [Paket programm dlia kompleksnogo analiza dinamiki i perspektiv energosnabzheniia v promuzle]

Panin, A.P., Problemy energoobespecheniia Murmanskoĭ oblasti (Problems in the energy supply for the Murmansk region). Edited by I.R. Stepanov, Apatity, Kol'skiĭ nauchnyĭ tsentr RAN, 1992, p.82-86, In Russian. 3 refs.

Computer programs, Computer applications, Electric power, Cold weather operation, Russia—Murmansk

50-713

Integrated analysis of energy balance and trends in scientific-technical progress in the industrial center of non-ferrous metallurgy. [Kompleksnyĭ analiz energobalansa i napravleniĭ nauchno-tekhnicheskogo progressa promuzla tsvetnoĭ metallurgii]

Panin, A.P., Voronkina, T.E., Nikiforova, G.V., Chetvertkov, M.S., Tkacheva, L.V., Problemy energoobespecheniia Murmanskoĭ oblasti (Problems in the energy supply for the Murmansk region). Edited by I.R. Stepanov, Apatity, Kol'skiĭ nauchnyĭ tsentr RAN, 1992, p.87-94, In Russian. 1 ref.

Cold weather operation, Economic analysis, Industrial buildings, Computer programs, Computer applications, Metals, Russia—Murmansk

50-714

Characteristics of forecasting energy consumption in the mining industry. [Osobennosti prognozirovaniia energopotrebleniia v gornorudnoĭ promyshlennosti]

Kuznetsov, N.M., Problemy energoobespecheniia Murmanskoĭ oblasti (Problems in the energy supply for the Murmansk region). Edited by I.R. Stepanov, Apatity, Kol'skiĭ nauchnyĭ tsentr RAN, 1992, p.94-96, In Russian.

Mining, Industrial buildings, Electric power, Cold weather operation, Forecasting, Russia—Murmansk

50-715

Charting movement of sea ice by satellite.

Carsey, F., *Sea technology*, Oct. 1995, 36(10), p.17-22, 2 refs.

Sea ice distribution, Ice surveys, Radar tracking, Drift, Synthetic aperture radar, Spaceborne photography, Air ice water interaction

50-716

Ice/snow thickness measuring system.

Tank, C.L., Belliveau, D., Mahon, A.M., Stewart, P.L., *Sea technology*, Oct. 1995, 36(10), p.39-45, 3 refs.

Sea ice distribution, Ice cover thickness, Ice melting, Ice growth, Ice edge, Remote sensing, Sensors, Acoustic measurement, Drift stations, Performance

50-717

Dissolved organic matter in arctic multi-year sea ice during winter: major components and relationship to ice characteristics.

Thomas, D.N., Lara, R.J., Eicken, H., Kattner, G., Skoog, A., *Polar biology*, Aug. 1995, 15(7), p.477-483, 31 refs.

Marine biology, Sea ice, Ice floes, Sedimentation, Ice cores, Ice composition, Sampling, Chemical analysis, Nutrient cycle, Solubility, Correlation, Arctic Ocean

50-718

Satellite tracking of high-arctic northern fulmars.

Falk, K., Møller, S., *Polar biology*, Aug. 1995, 15(7), p.495-502, 33 refs.

Marine biology, Ecology, Sea ice distribution, Ice edge, Polynyas, Remote sensing, Spaceborne photography, Radio waves, Greenland Sea

50-719

NSF: ocean sciences, arctic & global change research.

Gross, M.G., *Sea technology*, Jan. 1991, 32(1), p.45-46.

Oceanography, Research projects, Climatology, Global change, Air ice water interaction

50-720

What really ended the last ice age? Scientists say the oceans did it. *Sea technology*, Mar. 1992, 33(3), p.72-73.

Ice age theory, Paleoclimatology, Ocean currents, Heat transfer, Global warming, Pleistocene, Glacier melting, Drill core analysis

50-721

Thermodynamic evaluation of the cold resistance of steel elements. [Termodinamicheskaia otsenka khladostoĭkosti stal'nykh elementov]

Shafraĭ, S.D., Shafraĭ, K.A., *Izvestiia vysshikh uchebnykh zavedeniĭ. Stroitel'stvo*, July-Aug. 1995, No.7-8, p.3-9, In Russian. 9 refs.

Steels, Cold tolerance, Deformation, Analysis (mathematics), Temperature effects, Steel structures, Thermodynamics

50-722

Economic expediency of composite insulating bricks for wall structures under conditions of the West Siberian region. [Ekonomicheskaia tselesoobraznost' kompozita kirpich-uteplitel' dlia stenovykh konstruktsiĭ v usloviiakh Zapadno-Sibirskogo regiona]

Nedavniĭ, O.I., Dudka, B.V., Matiugina, E.G., *Izvestiia vysshikh uchebnykh zavedeniĭ. Stroitel'stvo*, July-Aug. 1995, No.7-8, p.71-73, In Russian. 1 ref.

Walls, Bricks, Insulation, Cold weather performance

50-723

Effects of climatic factors on the engineering-economic indexes of housing construction with constant flow of building materials. [Vliianie klimaticheskikh faktorov na tekhniko-ekonomicheskie pokazateli zastroĭki zhilykh kvartalov sistemoĭ postoianno deĭstvuiushchikh potokov]

Ruch'ev, A.P., Gamaleĭ, I.A., *Izvestiia vysshikh uchebnykh zavedeniĭ. Stroitel'stvo*, July-Aug. 1995, No.7-8, p.73-78, In Russian. 2 refs.

Houses, Cold weather construction, Economic analysis, Climatic factors, Cold weather operation

50-724

New concept of durability of highway construction. [Novaia kontseptsiia dolgovechnosti dorozhnykh konstruktsiĭ]

Smirnov, A.V., *Izvestiia vysshikh uchebnykh zavedeniĭ. Stroitel'stvo*, July-Aug. 1995, No.7-8, p.107-111, In Russian. 1 ref.

Roads, Construction, Cold weather performance, Deformation, Analysis (mathematics)

50-725

Method for making short piles with an expanded pivot under winter conditions. [Sposob ustroĭstva korotkikh svaĭ s ushirennoĭ piatoĭ v zimnikh usloviiakh]

Shishkov, IU.A., *Izvestiia vysshikh uchebnykh zavedeniĭ. Stroitel'stvo*, July-Aug. 1995, No.7-8, p.141-144, In Russian. 3 refs.

Piles, Pile structures, Foundations, Frozen ground, Cold weather construction

50-726

Heat transfer and frost-thaw penetration in soil surrounding an inclusion of sand; numerical model results relevant to electromagnetic sensor system performance.

Peck, L., O'Neill, K., CR 95-13, *U.S. Army Cold Regions Research and Engineering Laboratory. Report*, July 1995, 22p., ADA-299 439, 12 refs.

Heat transfer, Frost penetration, Thaw depth, Soil temperature, Soil water, Sands, Freezing front, Heat capacity, Thermal conductivity, Mathematical models, Electromagnetic prospecting

One- and two-dimensional numerical simulations of heat flow in silty soil with and without a sand inclusion have determined the magnitude and the lateral extent of the disruption in frost and thaw penetration attributable to the presence of the inclusion. Four different soil temperature histories, derived from field data at a Vermont site, were used as the surface boundary condition for the winter-long simulations. This identified differences in frost depth and soil temperature resulting solely from an overall colder or warmer soil surface condition. For a given surface boundary condition, the moisture content of the soil was varied to contrast the changes in frost penetration caused by the moisture-dependent differences in soil thermal conductivity and latent heat. The drier sand with its smaller latent heat freezes more rapidly than does the soil under identical conditions, so initially frost penetration is greater when the sand inclusion is present because the freezing front proceeds rapidly through the sand. Subsequently, the freezing front is deeper in soil without a sand inclusion. The less conductive sand impedes heat flow toward the soil surface, resulting in higher soil temperatures beneath the inclusion, which in turn retards freezing of the soil. Frost penetration beneath a sand inclusion is deeper the drier the soil is; with no sand inclusion present, frost depth is greater the more moist the silty soil is.

50-727

Dispersion-by-chemical-reaction technology to stabilize asphalt tar, Eareckson Air Force Station, Shemya, Alaska.

Brar, G.S., Marion, G.M., SR 95-11, *U.S. Army Cold Regions Research and Engineering Laboratory. Special report*, Mar. 1995, 13p., ADA-298 862, 33 refs.

Bitumens, Soil pollution, Hydraulics, Soil water, Particle size distribution, Waste treatment, Freeze thaw cycles

Many military installations have soil contamination, ranging from heavy metals to petroleum products. This report evaluates the Dispersion-by-Chemical-Reaction (DCR) technology to remediate soil contaminated by asphalt tar at Eareckson Air Force Station on Shemya I. in Alaska. The DCR technology uses patented hydrophobized CaO (lime) as the primary reagent for stabilizing heavy metals and organics in a relatively insoluble $CaCO_3$ matrix. Field work conducted at Shemya in Jan. 1994 showed DCR technology to significantly affect soil physical and chemical properties: moisture significantly decreased and temperature significantly increased during the mixing step (up to 95°C). The resultant product had a relatively low specific gravity and a coarse texture. Because of the coarse texture, the treated soils had high hydraulic conductivities. Reducing these for some applications will necessitate mixing with finer textured silts or clays. There were a few significant differences in chemical concentrations between DCR-treated and untreated soil, with the DCR-treated material generally having higher concentrations.

50-728

Initial results from small-scale frost heave experiments in a centrifuge.

Ketcham, S.A., Black, P.B., CR 95-09, *U.S. Army Cold Regions Research and Engineering Laboratory. Report*, May 1995, 18p., ADA-299 023, 22 refs.

Frost heave, Models, Mathematical models

Frost heave modeling is presented as a problem of small-scale experimental modeling. Scale factors applicable to frost heave model testing are reviewed, and initial data from frost heave experiments conducted as centrifuge model tests are presented. Ongoing improvements, modifications and future model tests are discussed.

50-729

Literature review on decontaminating groundwater sampling devices; organic pollutants.

Parker, L.V., CR 95-14, *U.S. Army Cold Regions Research and Engineering Laboratory. Report*, July 1995, 15p., ADA-299 046, 40 refs.

Ground water, Sampling, Performance, Cold weather performance, Water pollution, Pumps

Current protocols for decontaminating devices used to sample groundwater for organic contaminants are reviewed. Most of the methods given by regulatory agencies provide little scientific evidence that justify the recommended protocols. In addition, only a few studies that actually compare various decontamination protocols could be found in the open literature, and those studies were limited

in their scope. Various approaches for decontamination and criteria that are important in determining how effectively a surface could be decontaminated are discussed.

50-730

Integrated international expedition of the Murmansk Marine Biology Institute to regions of the high latitude archipelagos of the Barents Sea (Franz Josef Land, Novaya Zemlya), August-September 1991 (RV *Dal'nye Zelentsy*, NTS *Pomar*). [Kompleksnaia mezhdunarodnaia ekspeditsiia Murmanskogo morskogo biologicheskogo instituta v raĭony vysokoshirotnykh arkhipelagov Barentseva moria (Zemlia Frantsa-Iosifa, Novaia Zemlia), avgust-sentiabr' 1991 g. (NIS "Dal'nye Zelentsy," NTS "Pomor")]

Matishov, G.G., Apatity, Kol'skiĭ nauchnyĭ tsentr RAN, 1992, 52p., In Russian with English title page, summary and table of contents. 13 refs.

Expeditions, Ecosystems, Marine biology, Russia—Franz Josef Land, Russia—Novaya Zemlya, Barents Sea

50-731

Current problems in the Aral Sea and prospects for their solutions. [Sovremennye problemy Aral'skogo moria i perspektivy ikh resheniia]

Tsytsarin, A.G., Bortnik, V.N., Monitoring prirodnoĭ sredy v basseĭne Aral'skogo moria (problemy razrabotki); materialy nauchno-koordinatsionnykh soveshchaniĭ (Monitoring the environment in the Aral Sea basin (problems of development); materials from the scientific-coordinating conferences). Edited by IU.A. Izrael' and IU.A. Anokhin, St. Petersburg, Gidrometeoizdat, 1991, p.7-28, In Russian. 13 refs.

Water balance, Salinity, Water chemistry, Climatic factors, Ground water, Humidity, Glaciers, Drainage, River flow, Environmental protection, CIS—Aral Sea

50-732

River flow of organic matter and biogenic elements to the Aral Sea. [Stok organicheskikh veshchestv i biogennykh elementov s rechnymi vodami v Aral'skoe more]

Smirnov, M.P., Monitoring prirodnoĭ sredy v basseĭne Aral'skogo moria (problemy razrabotki); materialy nauchno-koordinatsionnykh soveshchaniĭ (Monitoring the environment in the Aral Sea basin (problems of development); materials from the scientific-coordinating conferences). Edited by IU.A. Izrael' and IU.A. Anokhin, St. Petersburg, Gidrometeoizdat, 1991, p.67-80, In Russian. 23 refs.

River flow, Glacial rivers, CIS—Aral Sea, Kazakhstan—Syrdar'ia River, CIS—Amudar'ia River

50-733

Obscuration in smoke and snow.

Hutt, D.L., Smoke/Obscurants Symposium, 14th, Laurel, MD, Apr. 17-19, 1990. Proceedings. Vol.2, Aberdeen Proving Ground, MD, U.S. Army Chemical Research, Development and Engineering Center (CRDEC), 1990, p.363-373, 8 refs.

Snow optics, Falling snow, Scavenging, Visibility, Military operation

50-734

Precipitation parameters in natural obscuration.

Hogan, A.W., MP 3682, Smoke/Obscurants Symposium, 14th, Laurel, MD, Apr. 17-19, 1990. Proceedings. Vol.2, Aberdeen Proving Ground, MD, U.S. Army Chemical Research, Development and Engineering Center (CRDEC), 1990, p.375-384, 34 refs.

Falling snow, Snowfall, Snowflakes, Snow optics, Precipitation (meteorology), Visibility, Optical absorption, Atmospheric attenuation, Military operation

Visibilities of less than 10 km are often accompanied by diminution of electro-optical transmission parameters that inhibit Army operations. Visibilities of this magnitude resulting from frozen precipitation pose additional difficulties as the precipitated ice alters target signatures and obscures ground-emplaced targets. Numerical parameters derived from snowfall and suspended ice crystal observations in the literature and the SNOW experiment database are presented. These numerical parameters allow generalized prediction of concentration of airborne snow or ice crystals, and the rate of obscuration of surfaces, from mass precipitation rate considerations. A comparison is presented, relating the concentration of airborne precipitation to aerosol concentrations.

50-735

Snow scavenging on the winter battlefield.

Slota, J.R., Petzko, D.R., Cragin, J.H., MP 3683, Smoke/Obscurants Symposium, 14th, Laurel, MD, Apr. 17-19, 1990. Proceedings. Vol.2, Aberdeen Proving Ground, MD, U.S. Army Chemical Research, Development and Engineering Center (CRDEC), 1990, p.395-409, 9 refs.

Falling snow, Snow optics, Scavenging, Visibility, Infrared reconnaissance, Smoke generators, Military operation

The authors examined the effectiveness of inventory infrared (IR) self-screening obscurants in a winter battlefield environment. Snow scavenging mechanisms were incorporated into a standard U.S. Army battlefield obscurant model. Using this modified obscurant model as well as atmospheric transmission and EO system performance models, the authors analyze the threat posed by a postulated FLIR against a tracked vehicle deploying self-screening smoke in a ground-to-ground engagement.

50-736

Purpose and achievements of Smoke Week XI.

Kennedy, B.W., Locke, B.A., Klimek, W., Perron, F.E., Jr., MP 3684, Smoke/Obscurants Symposium, 14th, Laurel, MD, Apr. 17-19, 1990. Proceedings. Vol.1, Aberdeen Proving Ground, MD, U.S. Army Chemical Research, Development and Engineering Center (CRDEC), 1990, p.217-231, 3 refs.

Snow optics, Snow cover effect, Visibility, Lidar, Sensors, Photographic reconnaissance, Cold weather tests, Military operation

Smoke Week XI was conducted at the Defence Research Establishment Valcartier (DREV), Quebec, Canada, from Feb. 20 to Mar. 10, 1989. The test was designed to evaluate electro-optical sensor performance in atmospheres obscured by man-made obscurants as well as by snow. Forty-eight electro-optical sensors were involved in 50 trials for a total of 100 hours of test time. This paper explains the purpose and achievements of Smoke Week XI, including examples of data collected during this test.

50-737

Comparison of sensors and conditions at Smoke Week X and Smoke Week XI.

Kennedy, B.W., Locke, B.A., Smoke/Obscurants Symposium, 14th, Laurel, MD, Apr. 17-19, 1990. Proceedings. Vol.1, Aberdeen Proving Ground, MD, U.S. Army Chemical Research, Development and Engineering Center (CRDEC), 1990, p.233-250, 1 ref.

Snow optics, Snow cover effect, Visibility, Lidar, Cold weather tests, Military operation

50-738

Mapping of winter surface conditions at Camp Grayling, Michigan.

Haugen, R.K., Bates, R.E., Bruzewicz, A.J., MP 3685, Smoke/Obscurants Symposium, 16th, Laurel, MD, Apr. 14-16, 1992. Proceedings. Vol.1, Aberdeen Proving Ground, MD, U.S. Army Chemical Research, Development and Engineering Center (CRDEC), 1992, p.251-266, 9 refs.

Snow surveys, Snow depth, Snow surface temperature, Weather forecasting, Meteorological charts, Terrain identification, Computerized simulation, Mapping, United States—Michigan

The goal of this project was to produce a map showing snow cover and surface temperature conditions in support of a winter Joint Munitions Test and Evaluation Program Office (CHICKEN LITTLE, JPO) test during Feb.-Mar. 1990. The approach was to use the GRASS (Geographical Resources Analysis Support System) Geographical Information System (GIS) to estimate snow-cover depth and snow surface temperature background characteristics for the Camp Grayling, MI Winter Field Test Site, an area of approximately 6 km^2. Based on digitized topographic and vegetation maps, a set of six surface background maps was developed. The interpreted scenes for two days during Feb. 1990 were chosen to provide maximum background surface condition differences. Input data included an array of temperature and snow measurements from the Environmental Plot within the test site and supplementary climatic data from the NOAA station at Grayling and the Houghton Lake, Michigan FAA station. Solar azimuths and angle of incidence were calculated. The rules for the GIS input were based both on observational data from the above source and the best estimate based on experience for parameters such as temperature difference based on lapse rates, slope, and aspect. Snow-cover depth calculations were based on measured deposition at several sites, time of day, elevation, and type of vegetation.

50-739

Winter limnology: a comparison of physical, chemical and biological characteristics in two temperate lakes during ice cover.

Agbeti, M.D., Smol, J.P., *Hydrobiologia*, May 19, 1995, 304(3), p.221-234, 51 refs.

Limnology, Icebound lakes, Stratification, Ecosystems, Plankton, Microbiology, Biomass, Sampling, Distribution, Ice water interface, Ice cover effect

50-740

Hydrological effects of hypothetical climate change in the East River basin, Colorado, USA.

McCabe, G.J., Jr., Hay, L.E., *Hydrological sciences journal*, June 1995, 40(3), p.303-318, With French summary. 19 refs.

Climatology, Climatic changes, Precipitation (meteorology), River basins, Runoff forecasting, Snowmelt, Snow hydrology, Simulation, Temperature effects, United States—Colorado

50-741

Correlations between concentrations of plant nutrients in runoff from small catchments in Norway.

Haraldsen, T.K., Oygarden, L., Rognerud, B., Aastveit, A.H., *Nordic hydrology*, 1995, 26(2), p.91-110, 15 refs.

Watersheds, Hydrology, Agriculture, Nutrient cycle, Snowmelt, Runoff, Leaching, Ground water, Water pollution, Correlation, Statistical analysis, Seasonal variations, Norway

50-742

Frost heave due to ice lens formation in freezing soils. 1. Theory and verification.

Sheng, D., Axelsson, K., Knutsson, S., *Nordic hydrology*, 1995, 26(2), p.125-146, 49 refs.

Geocryology, Frost heave, Hydrology, Ice lenses, Soil freezing, Freezing front, Permeability, Ice water interface, Soil water migration, Temperature effects, Frozen ground expansion, Mathematical models

50-743

Frost heave due to ice lens formation in freezing soils. 2. Field application.

Sheng, D., Axelsson, K., Knutsson, S., *Nordic hydrology*, 1995, 26(2), p.147-168, 31 refs.

Geocryology, Frozen ground thermodynamics, Frost heave, Soil freezing, Ice lenses, Insulation, Roadbeds, Soil profiles, Water pressure, Mathematical models, Computerized simulation

50-744

Pleistocene glaciation of the German uplands as reflected in recent research. [Die eiszeitliche Vergletscherung der deutschen Mittelgebirge im Spiegel neuerer Forschungen]

Rother, K., *Petermanns Geographische Mitteilungen*, 1995, 139(1), p.45-52, In German with English and Russian summaries. 43 refs.

Pleistocene, Glaciation, Mountain glaciers, Glacial geology, Geomorphology, Germany

50-745

Global environmental change: the northern North Atlantic.

Schäfer, P., Thiede, J., Gerlach, S., Graf, G., Zeitzschel, B., *Geologische Rundschau*, Feb. 1995, 84(1), p.3-10, 5 refs.

Oceanography, Research projects, Climatology, Global change, Ocean currents, Sea ice distribution, Climatic changes, Marine deposits, Bottom sediment, Marine biology

50-746

Pelagic processes and vertical flux of particles: an overview of a long-term comparative study in the Norwegian Sea and Greenland Sea.

von Bodungen, B., et al, *Geologische Rundschau*, Feb. 1995, 84(1), p.11-27, 83 refs.

Oceanography, Marine biology, Subpolar regions, Sedimentation, Suspended sediments, Particles, Plankton, Decomposition, Sampling, Seasonal variations, Greenland Sea, Norwegian Sea

50-747

Benthic-pelagic coupling in the Greenland-Norwegian Sea and its effect on the geological record.
Graf, G., et al, *Geologische Rundschau,* Feb. 1995, 84(1), p.49-58, 61 refs.
Oceanography, Sedimentation, Marine biology, Biomass, Sedimentation, Marine deposits, Bottom sediment, Water chemistry, Sampling, Nutrient cycle, Norwegian Sea, Greenland Sea

50-748

Large methane plume east of Bear Island (Barents Sea): implications for the marine methane cycle.
Lammers, S., Suess, E., Hovland, M., *Geologische Rundschau,* Feb. 1995, 84(1), p.59-66, 29 refs.
Oceanography, Ocean bottom, Water chemistry, Sampling, Natural gas, Geochemical cycles, Atmospheric composition, Air water interactions, Climatic factors, Barents Sea

50-749

Plankton in the Norwegian-Greenland Sea: from living communities to sediment assemblages—an actualistic approach.
Samtleben, C., et al, *Geologische Rundschau,* Feb. 1995, 84(1), p.108-136, Refs. p.134-136.
Oceanography, Marine biology, Plankton, Biomass, Ecosystems, Quaternary deposits, Bottom sediment, Sedimentation, Sampling, Paleoecology, Norwegian Sea, Greenland Sea

50-750

Three-dimensional numerical modeling of Late Quaternary paleoceanography and sedimentation in the northern North Atlantic.
Haupt, B.J., Schäfer-Neth, C., Stattegger, K., *Geologische Rundschau,* Feb. 1995, 84(1), p.137-150, 35 refs.
Oceanography, Marine deposits, Sedimentation, Stratigraphy, Quaternary deposits, Ocean currents, Ice cover effect, Climatic changes, Mathematical models, Greenland Sea

50-751

Greenland ice sheet thickness changes measured by laser altimetry.
Krabill, W., Thomas, R., Jezek, K.C., Kuivinen, K.C., Manizade, S., *Geophysical research letters,* Sep. 1, 1995, 22(17), p.2341-2344, 18 refs.
Ice sheets, Ice surveys, Aerial surveys, Height finding, Lasers, Ice cover thickness, Topographic surveys, Accuracy, Periodic variations, Greenland

50-752

Antarctic bottom water formation and the global cadmium to phosphorus relationship.
Frew, R.D., *Geophysical research letters,* Sep. 1, 1995, 22(17), p.2349-2352, 25 refs.
Oceanography, Water chemistry, Sediments, Geochemistry, Ocean currents, Hydrography, Paleoecology, Antarctica—Weddell Sea

Near-surface waters close to the antarctic continent are found to have high cadmium concentrations relative to phosphorus. These waters have been shown to be the major component in the local formation of Antarctic Bottom Water in this region. It is demonstrated that Antarctic Bottom Water so formed would have a high preformed cadmium-to-phosphorus ratio. The ventilation of the abyssal ocean with this water would contribute to the observed kink in the global cadmium-to-phosphorus relationship. This is an important conclusion for paleochemical studies and may account for part of the discrepancy between cadmium and carbon-13 paleochemical tracers observed in the southern ocean. (Auth. mod.)

50-753

Unusual PSCs observed by lidar in Antarctica.
Stefanutti, L., Morandi, M., Del Guasta, M., Godin, S., David, C., *Geophysical research letters,* Sep. 1, 1995, 22(17), p.2377-2380, 14 refs.
Cloud physics, Climatology, Stratosphere, Polar stratospheric clouds, Heterogeneous nucleation, Aerosols, Lidar, Evaporation, Antarctica—Dumont d'Urville Station

Polar stratospheric cloud (PSC) measurements by ground-based lidar were carried out at Dumont d'Urville during the years 1989 to 1993. From such measurements it can be seen that there are cases of PSCs that are not consistent with the simplest nitric acid trihydrate (NAT) theories. Several cases of long-lasting, non-depolarizing PSCs were detected at temperatures below or close to the NAT freezing threshold, at about 195°K, suggesting the presence of durable supercooled droplets. PSC cases showing depolarizing (frozen) particles well above the NAT expected threshold are also shown. These results seem to be more consistent with recent laboratory and *in situ* findings, suggesting a close link between sulfate and PSC particles through the HNO_3-H_2O-H_2SO_4 ternary system. Depolarizing "warm" PSCs are also consistent with the laboratory-observed high melting point of the frozen sulfate core, which remains after NAT evaporation. (Auth. mod.)

50-754

Evidence for midwinter chemical ozone destruction over Antarctica.
Vömel, H., Hofmann, D.J., Oltmans, S.J., Harris, J.M., *Geophysical research letters,* Sep. 1, 1995, 22(17), p.2381-2384, 8 refs.
Polar atmospheres, Sounding, Cloud physics, Profiles, Polar stratospheric clouds, Ozone, Atmospheric attenuation, Desiccation, Aerosols, Heterogeneous nucleation, Antarctica—McMurdo Station

Two ozone profiles obtained over McMurdo Station showed a strong depletion in stratospheric ozone, and a simultaneous profile of water vapor showed the first clear signs of dehydration. The observation of polar stratospheric clouds (PSCs) beginning with the first sounding showing ozone depletion, the indication of rehydration layers which could be a sign for recent dehydration, and trajectory calculations all indicate that the observed low ozone was not the result of transport from lower latitudes. During this time the vortex was strongly distorted, transporting PSC-processed air well into sunlit latitudes where photochemical ozone destruction may have occurred. The correlation of ozone depletion and dehydration indicates that water ice PSCs provided the dominant surface for chlorine activation. An analysis of the time when the observed air masses could have formed type II PSCs for the first time limits the time scale for the observed ozone destruction to about 4 days. (Auth. mod.)

50-755

Phase transformation in materials with nonuniform phase transition temperatures.
Hong, J.S., Rubinsky, B., *Journal of heat transfer,* Aug. 1995, 117(3), p.803-805, 2 refs.
Heat transfer, Ice physics, Liquid solid interfaces, Admixtures, Artificial thawing, Phase transformations, Frozen liquids, Mathematical models, Enthalpy, Temperature control, Temperature variations

50-756

Marine hydro-engineering and the mechanization of loading operations in ports; collected scientific papers. [Morskaia gidrotekhnika i mekhanizatsiia peregruzochnykh rabot v portakh; sbornik nauchnykh trudov]
IAkovlev, P.I., ed, Moscow, Mortekhinformreklama, 1992, 109p., In Russian. For selected papers see 50-757 through 50-759.
Ports, Loads (forces), Walls, Cold weather operation, Cold weather performance

50-757

Forecasting the thermal regime of thin-walled moored structures under Arctic conditions by numerical modeling on computers. [Prognozirovanie teplovogo rezhima tonkostennykh prichal'nykh sooruzheniĭ v usloviiakh Arktiki metodom modelirovaniia v tsifroprovodiashcheĭ srede na komp'iuterakh]
Shkola, A.V., Kniazev, L.V., Morskaia gidrotekhnika i mekhanizatsiia peregruzochnykh rabot v portakh; sbornik nauchnykh trudov (Marine hydro-engineering and the mechanization of loading operations in ports; collected scientific papers). Edited by P.I. IAkovlev, Moscow, Mortekhinformreklama, 1992, p.5-7, In Russian. 3 refs.
Thermal regime, Forecasting, Cold weather operation, Mathematical models, Computer applications, Structures, Walls, Moorings

50-758

Thin retaining walls for conditions in the Far North and the Far East. [Tonkie podpornye stenki dlia usloviĭ Kraĭnego Severa i Dal'nego Vostoka]
Omel'chenko, IU.M., Morskaia gidrotekhnika i mekhanizatsiia peregruzochnykh rabot v portakh; sbornik nauchnykh trudov (Marine hydro-engineering and the mechanization of loading operations in ports; collected scientific papers). Edited by P.I. IAkovlev, Moscow, Mortekhinformreklama, 1992, p.29-32, In Russian.
Walls, Supports, Cold weather performance, Russia—Far North, Russia—Far East

50-759

Question of using highly durable steels in the metal construction of load bearing machines. [K voprosu primeneniia vysokoprochnykh staleĭ v metallokonstruktsiiakh gruzopod"emnykh mashin]
Pustovoĭ, V.N., Morskaia gidrotekhnika i mekhanizatsiia peregruzochnykh rabot v portakh; sbornik nauchnykh trudov (Marine hydro-engineering and the mechanization of loading operations in ports; collected scientific papers). Edited by P.I. IAkovlev, Moscow, Mortekhinformreklama, 1992, p.90-95, In Russian. 5 refs.
Steels, Machinery, Equipment, Loads (forces), Cold weather performance

50-760

Thermal stress measurements in asphalt concrete.
Janoo, V.C., Bayer, J., Jr., Walsh, M.R., MP 3686, *U.S. Department of Transportation. Federal Aviation Administration. Report,* July 1993, DOT/FAA/RD/92/13, 30p., Refs. p.29-30. For another source see 48-720.
Bituminous concretes, Cracking (fracturing), Thermal stresses, Pavements, Cold weather performance, Cold stress, Tensile properties, Measurement

Asphalt concrete (AC) pavements in cold regions are prone to thermal cracking. There are two theories to explain this. The first one is that at some low temperature, the thermal stress in the pavement structure exceeds the tensile strength of the mixture, usually in the winter. The second is that the AC mixture fails through thermal fatigue caused by daily temperature cycling. There are many ways of characterizing AC performance at low temperatures, and this report summarizes the different failure criteria and test methods for doing this. One test method described here that CRREL has developed is a thermal stress test device for measuring thermally induced stresses in the laboratory. The device can be used for monotonic and cyclic loading, while various temperature drop rates can be applied to the specimen. The calibration of the test apparatus, loading pattern and specimen configuration used are described and typical results are presented.

50-761

Testing of radome material and special coatings for North Warning System.
Crory, F.E., MP 3687, Hanover, NH, U.S. Army Cold Regions Research and Engineering Laboratory, Mar. 1988, 23p. + appends., 2 refs.
Radomes, Protective coatings, Warning systems, Countermeasures, Cold weather tests, Icing, Snow cover, Drops (liquids)

50-762

Submesoscale variation in snow-induced obscuration.
Hogan, A.W., MP 3688, Smoke/Obscurants Symposium, 15th, Laurel, MD, Apr. 16-18, 1991. Proceedings. Vol.2, Aberdeen Proving Ground, MD, U.S. Army Chemical Research, Development and Engineering Center (CRDEC), 1991, p.521-529, 16 refs.
Falling snow, Snowflakes, Snow optics, Visibility, Computer programs, Military operation

50-763

Snowfall intensity climatologies within the contiguous United States.
Ryerson, C.C., MP 3689, Smoke/Obscurants Symposium, 15th, Laurel, MD, Apr. 16-18, 1991. Proceedings. Vol.2, Aberdeen Proving Ground, MD, U.S. Army Chemical Research, Development and Engineering Center (CRDEC), 1991, p.531-540, 21 refs.
Falling snow, Snowfall, Snowstorms, Snow optics, Visibility, Meteorological charts, United States

The suspended cross-sectional area of snow is a natural property of the obscurant frequently responsible for disruption of battlefield electro-optical target acquisition systems. This cross-sectional area is not uniquely related to the mass or depth accumulation rates of snow described as snowfall intensity, but is derivable from them. Hourly snowfall intensity was compiled for the lower 48 states (CONUS) from four years of National Weather Service hourly liquid precipitation measurements and hourly present weather codes. Hourly snowfall intensity was mapped for 148 weather stations. High intensity snowfalls, approaching about 1 mm/hour water equivalent, generally occur in mountainous areas and along the Northeast Coast, with lower intensities, approaching 0.6 mm/hour, occurring in the northern Plains. Despite their reported violence, the Great Lakes lake-effect areas showed intensities one-half of a standard deviation below the CONUS mean. Methodological and climatological reasons for the patterns and for mapping tactically sensitive areas are addressed.

50-764

Snow scavenging effects on large-area smoke screens.

Slota, J.R., Cragin, J.H., MP 3690, Smoke/Obscurants Symposium, 15th, Laurel, MD, Apr. 16-18, 1991. Proceedings. Vol.2, Aberdeen Proving Ground, MD, U.S. Army Chemical Research, Development and Engineering Center (CRDEC), 1991, p.541-559, 10 refs.

Falling snow, Snow optics, Scavenging, Smoke generators, Visibility, Infrared reconnaissance, Computerized simulation, Military operation

The authors examine the effectiveness of brass flake infrared (IR) battlefield obscurant during snowfall. Previous laboratory measurements made at CRREL have shown that scavenging of smoke particles by falling snow reduces the effectiveness of a smoke cloud. Offsetting this increase in transmission through the smoke is a reduction in transmission due to the snow itself. To illustrate the overall effect of these two mechanisms on the battlefield, the US Army COMBIC battlefield obscurant model is used with slight modifications. In conjunction with this obscurant model, a US Army standard atmospheric transmission model and an EO system performance model are coupled to predict target detection ranges for a postulated threat FLIR against a tracked vehicle in a ground-to-ground engagement. The model is exercised for varying snowfall intensities and crystal types and for various numbers of smoke generator sources. An analysis of these scenarios is presented, with suggested criteria for when scavenging of smoke by snow is important.

50-765

Background classification for infrared seekers.

Berger, R.H., MP 3691, Smoke/Obscurants Symposium, 15th, Laurel, MD, Apr. 16-18, 1991. Proceedings. Vol.2, Aberdeen Proving Ground, MD, U.S. Army Chemical Research, Development and Engineering Center (CRDEC), 1991, p.837-843, 3 refs.

Infrared reconnaissance, Terrain identification, Snow cover effect, Image processing, Computer programs, Military operation

The detection of a target embedded in a scene depends upon the target/background contrast, target shape, size and other more subtle characteristics such as relative motion. The one discrimination characteristic common to all detection schemes is the reliance on contrast. The other cues may be used, but they are only made apparent when there is sufficient contrast. How effective a seeker is in detecting a target also depends upon the contrast between various scene elements in the background, since these contrasts are the source of false alarms that reduce the overall effectiveness of the seeker. To provide a measure of generic seeker effectiveness against various backgrounds, the backgrounds were classified by the inherent contrast within them. This was done by examining the various scene elements within the background and determining what weather and environmental conditions have a critical role in determining the contrast of these scene elements. Data from the Chicken Little II winter tests in Grayling, MI were used to develop the classification methodology.

50-766

Desiccation of white spruce seedlings planted in the southern boreal forest of British Columbia.

Krasowski, M.J., Letchford, T., Caputa, A., Bergerud, W.A., *Water, air, and soil pollution,* May 1995, 82(1-2), International Boreal Forest Research Association Conference, Saskatoon, Saskatchewan, Canada, Sep. 25-30, 1994. Boreal forests and global change. Edited by M.J. Apps et al, p.133-146, 15 refs.

Forestry, Trees (plants), Roots, Cold tolerance, Cold stress, Soil freezing, Damage, Desiccation, Cold weather tests, Acclimatization, Canada—British Columbia

50-767

Boreal forest catchments: research sites for global change at high latitudes.

Slaughter, C.W., Glotov, V.E., Viereck, L.A., Mikhailov, V.M., *Water, air, and soil pollution,* May 1995, 82(1-2), International Boreal Forest Research Association Conference, Saskatoon, Saskatchewan, Canada, Sep. 25-30, 1994. Boreal forests and global change. Edited by M.J. Apps et al, p.351-361, 32 refs.

Forest ecosystems, Watersheds, Subarctic landscapes, Global change, Global warming, Permafrost transformation, Discontinuous permafrost, Ground thawing, Water balance

50-768

Nashwaak Experimental Watershed Project: analysing effects of clearcutting on soil temperature, soil moisture, snowpack, snowmelt and stream flow.

Meng, F.R., Bourque, C.P.A., Jewett, K., Daugharty, D., Arp, P.A., *Water, air, and soil pollution,* May 1995, 82(1-2), International Boreal Forest Research Association Conference, Saskatoon, Saskatchewan, Canada, Sep. 25-30, 1994. Boreal forests and global change. Edited by M.J. Apps et al, p.363-374, 14 refs.

Forestry, Environmental impact, Watersheds, Water balance, Snow hydrology, Soil water, Stream flow, Snowmelt, Snow cover effect, Snow water content, Computerized simulation, Canada—New Brunswick

50-769

Potential effects of climatic change on some western Canadian forests, based on phenological enhancements to a patch model of forest succession.

Burton, P.J., Cumming, S.G., *Water, air, and soil pollution,* May 1995, 82(1-2), International Boreal Forest Research Association Conference, Saskatoon, Saskatchewan, Canada, Sep. 25-30, 1994. Boreal forests and global change. Edited by M.J. Apps et al, p.401-414, 43 refs.

Forest ecosystems, Phenology, Climatic changes, Global warming, Revegetation, Frost resistance, Growth, Cold stress, Simulation, Temperature effects

50-770

Boreal forest futures: modelling the controls on tree species range limits and transient responses to climate change.

Sykes, M.T., Prentice, I.C., *Water, air, and soil pollution,* May 1995, 82(1-2), International Boreal Forest Research Association Conference, Saskatoon, Saskatchewan, Canada, Sep. 25-30, 1994. Boreal forests and global change. Edited by M.J. Apps et al, p.415-428, 24 refs.

Forest ecosystems, Climatology, Global change, Global warming, Forest lines, Growth, Distribution, Models, Forecasting, Cold stress

50-771

Global carbon dynamics of higher latitude forests during an anticipated climate change: ecophysiological versus biome-migration view.

Kohlmaier, G.H., Häger, C., Nadler, A., Würth, G., Lüdeke, M.K.B., *Water, air, and soil pollution,* May 1995, 82(1-2), International Boreal Forest Research Association Conference, Saskatoon, Saskatchewan, Canada, Sep. 25-30, 1994. Boreal forests and global change. Edited by M.J. Apps et al, p.455-464, 18 refs.

Forest ecosystems, Tundra, Global change, Global warming, Greenhouse effect, Geochemical cycles, Carbon dioxide, Soil air interface, Plant physiology, Models

50-772

Rapid oscillations in Vostok and GRIP ice cores.

Yiou, P., Jouzel, J., Johnsen, S., Rögnvaldsson, Ö.E., *Geophysical research letters,* Aug. 15, 1995, 22(16), p.2179-2182, 32 refs.

Paleoclimatology, Ice sheets, Glacier oscillation, Ice cores, Ice dating, Climatic changes, Correlation, Antarctica—Vostok Station, Greenland

This paper investigates the spectral properties of climatic time series derived from two recent ice cores in Greenland and East Antarctica. The signals behave in a similar way in the high frequency part of their spectra. The rapid oscillations found in the GRIP ice core were closely correlated to Heinrich Events. A comparable spectral feature is detected in the Vostok ice core. The possibilities of connections between the two hemispheres and proper ice sheet oscillations in the light of simple oscillating climate models are discussed. (Auth. mod.)

50-773

Diagnosis of the record minimum in arctic sea ice area during 1990 and associated snow cover extremes.

Serreze, M.C., Maslanik, J.A., Key, J.R., Kokaly, R.F., Robinson, D.A., *Geophysical research letters,* Aug. 15, 1995, 22(16), p.2183-2186, 19 refs.

Sea ice distribution, Climatology, Global warming, Ice edge, Seasonal variations, Ice melting, Snow melting, Snow cover effect, Albedo, Heat flux, Wind factors

50-774

Microcracking during stress-relief of polycrystalline ice formed at high pressure.

Meglis, I.L., Gagnon, R.E., Young, R.P., *Geophysical research letters,* Aug. 15, 1995, 22(16), p.2207-2210, 11 refs.

Ice mechanics, High pressure ice, Cracking (fracturing), Crack propagation, Ice microstructure, Mechanical tests, Tensile properties, Thin sections, Grain size, Bubbles

50-775

Data filtering for thermal mapping of road surface temperatures.

Shao, J., Lister, P.J., *Meteorological applications,* June 1995, 2(2), p.131-135, 6 refs.

Climatology, Air temperature, Microclimatology, Surface temperature, Road icing, Temperature measurement, Infrared mapping, Ice forecasting, Data processing, Analysis (mathematics)

50-776

New technique to provide high time resolution snowpack dating for stratigraphy and chemistry assessments.

Braaten, D.A., *Atmospheric environment,* Sep. 1995, 29(18), p.2525-2539, 7 refs.

Snow accumulation, Precipitation (meteorology), Snow composition, Metamorphism (snow), Snow cover structure, Sampling, Stratigraphy, Periodic variations, Age determination, Measuring instruments

50-777

Aerosols used as tracers for stratosphere-troposphere exchange in the Arctic.

Foltescu, V.L., Zahn, A., *Atmospheric environment,* Aug. 1995, 29(15), p.1777-1784, 20 refs.

Climatology, Polar atmospheres, Air pollution, Atmospheric composition, Aerial surveys, Sampling, Stratosphere, Aerosols, Particle size distribution, Ozone, Turbulent exchange

50-778

Study of an outstanding Saharan dust event at the high-alpine site Jungfraujoch, Switzerland.

Schwikowski, M., Seibert, P., Baltensperger, U., Gäggeler, H.W., *Atmospheric environment,* Aug. 1995, 29(15), p.1829-1842, 54 refs.

Aerosols, Cloud physics, Dust, Origin, Atmospheric circulation, Alpine landscapes, Snowfall, Scavenging, Snow air interface, Sampling, Chemical composition, Switzerland—Jungfraujoch

50-779

Bismuth in recent snow from central Greenland: preliminary results.

Candelone, J.P., Bol'shov, M.A., Rudnev, S.N., Hong, S.M., Boutron, C.F., *Atmospheric environment,* Aug. 1995, 29(15), p.1843-1848, 43 refs.

Precipitation (meteorology), Climatology, Snow cover, Snow composition, Snow impurities, Metals, Aerosols, Sampling, Volcanic ash, Spectroscopy, Detection, Greenland—Summit

50-780

Evaluation of methanol and $NaHSO_4$ for preservation of volatile organic compounds in soil subsamples.

Hewitt, A.D., MP 3692, *American environmental laboratory,* Aug. 1995, 7(8), p.16-21, 24 refs.

Soil pollution, Soil chemistry, Soil tests, Chemical analysis

50-781
Bioremediation of a petroleum-contaminated cryic soil: effects of phosphorus, nitrogen, and temperature.
Walworth, J.L., Reynolds, C.M., MP 3693, *Journal of soil contamination,* 1995, 4(3), p.299-310, 20 refs.
Oil spills, Soil pollution, Cryogenic soils, Soil microbiology, Soil chemistry, Land reclamation, Environmental protection, Waste disposal
Bioremediation has proved an effective means of treating petroleum-contaminated soils in cold areas, although the conditions required to maximize bioremediation in cold region (cryic) soils are not well documented. A laboratory study was conducted to investigate the effects of nitrogen and phosphorus levels and temperature on petroleum bioremediation. A cryic entisol contaminated with diesel fuel was treated with nitrogen (0, 400, 800, or 1200 mg/kg of soil) and phosphorus (0, 60, 120, or 180 mg/kg of soil) and incubated at two temperatures (10 and 20°C). At 10°C, bioremediation rates were not affected by fertility treatments. At 20°C, reaction rates were increased by the addition of P, but unaffected by N. Regardless of fertility regime, the rate of diesel loss was much greater in soil incubated at 20°C than in soil incubated at 10°C.

50-782
Potential for bioremediation of fuel-contaminated soil in Antarctica.
Wardell, L.J., *Journal of soil contamination,* 1995, 4(2), p.111-121, 26 refs.
Oil spills, Soil pollution, Cryogenic soils, Soil microbiology, Land reclamation, Environmental protection, Waste disposal, Antarctica—McMurdo Station
A preliminary investigation was conducted to identify the presence of bacteria in fuel-contaminated antarctic soil that could potentially be used to bioremediate the contaminated soil at McMurdo Station and other sites in Antarctica. The ability of soil microorganisms to metabolize fuels under the extreme climatic and oligotrophic conditions of Antarctica was of concern. Bacteria were isolated from fuel-contaminated soil on site at McMurdo. Bacteria from noncontaminated soil near the station were also studied for comparison. The antarctic soil microorganisms exhibited the ability to endure cold and oligotrophic environments. Experiments also showed that bacteria from the fuel spill site were active in their contaminated environment and that acclimation to xenobiotic compounds was necessary. Application of bioremediation in the extreme environmental conditions found at McMurdo were also considered. The possibility of altering environmental factors necessary to adequately support *in situ* bioremediation in this extreme climate is discussed. (Auth.)

50-783
River ice jams.
Beltaos, S., ed, Highlands Ranch, CO, Water Resources Publications, LLC, 1995, 372p., Refs. p.325-360. For individual papers see 50-784 through 50-792.
River ice, Ice jams, Ice conditions, Ice forecasting, Ice water interface, River flow

50-784
Introduction.
Gerard, R.L., Davar, K.S., River ice jams. Edited by S. Beltaos, Highlands Ranch, CO, Water Resources Publications, LLC, 1995, p.1-28.
River ice, Ice jams, Floods, Accidents, Canada

50-785
River ice processes.
Prowse, T.D., River ice jams. Edited by S. Beltaos, Highlands Ranch, CO, Water Resources Publications, LLC, 1995, p.29-70.
River ice, Air ice water interaction, Ice formation, Frazil ice, Ice growth, Ice deterioration, Ice breakup

50-786
Ice jam processes.
Beltaos, S., River ice jams. Edited by S. Beltaos, Highlands Ranch, CO, Water Resources Publications, LLC, 1995, p.71-104.
River ice, Ice jams, Ice water interface, River flow, Ice conditions, Ice forecasting

50-787
Theory.
Beltaos, S., River ice jams. Edited by S. Beltaos, Highlands Ranch, CO, Water Resources Publications, LLC, 1995, p.105-146.
River ice, Ice jams, Ice water interface, River flow, Ice cover strength, Ice friction, Ice mechanics, Ice breakup, Ice forecasting, Hydraulics, Mathematical models

50-788
Numerical modelling.
Petryk, S., River ice jams. Edited by S. Beltaos, Highlands Ranch, CO, Water Resources Publications, LLC, 1995, p.147-172.
River ice, Ice jams, Ice conditions, Ice forecasting, Computer programs, Computerized simulation, Mathematical models

50-789
Physical modelling.
Wuebben, J.L., MP 3694, River ice jams. Edited by S. Beltaos, Highlands Ranch, CO, Water Resources Publications, LLC, 1995, p.173-204.
River ice, Ice jams, Ice water interface, River flow, Ice forecasting, Ice models, Environment simulation, Environmental tests, Mathematical models

50-790
Mitigation.
Burrell, B.C., River ice jams. Edited by S. Beltaos, Highlands Ranch, CO, Water Resources Publications, LLC, 1995, p.205-252.
River ice, Ice jams, Ice control, Ice prevention, Ice removal, Ice blasting, Flood control

50-791
Field observations and measurements.
Petryk, S., Gatto, L.W., Prowse, T.D., Demuth, M., Wuebben, J.L., Beltaos, S., MP 3695, River ice jams. Edited by S. Beltaos, Highlands Ranch, CO, Water Resources Publications, LLC, 1995, p.253-286.
River ice, Ice jams, Ice surveys, Ice conditions, Ice water interface, River flow, Ice forecasting

50-792
Case study: freeze-up and jamming on the Peace River at Peace River.
Andres, D.D., River ice jams. Edited by S. Beltaos, Highlands Ranch, CO, Water Resources Publications, LLC, 1995, p.287-308.
River ice, Freezeup, Ice jams, Ice conditions, Ice forecasting, River flow, Flood forecasting, Canada—Alberta—Peace River

50-793
Physical-technical problems in the development of deposits in the North; collected scientific papers. [Fiziko-tekhnicheskie problemy osvoeniia mestorozhdeniĭ Severa; sbornik nauchnykh trudov]
Zarovniaev, B.N., ed, Yakutsk, Izd-vo IAkutskogo gosuniversiteta, 1992, 154p., In Russian. Refs. passim. For individual papers see 50-794 through 50-820.
Cold weather operation, Equipment, Mining, Explosives, Blasting, Excavation, Placer mining, Mine shafts

50-794
Ways of creating equipment and technology for the mining of mineral deposits in the North. [Puti sozdaniia progressivnoĭ tekhniki i tekhnologii dlia razrabotki mestorozhdeniĭ poleznykh iskopaemykh Severa]
Sleptsov, A.E., Fiziko-tekhnicheskie problemy osvoeniia mestorozhdeniĭ Severa; sbornik nauchnykh trudov (Physical-technical problems in the development of deposits in the North; collected scientific papers). Edited by B.N. Zarovniaev, Yakutsk, Izd-vo IAkutskogo gosuniversiteta, 1992, p.3-17, In Russian. 8 refs.
Equipment, Mining, Natural resources, Cold weather operation, Russia—Far North

50-795
Economic results of the introduction of a new technology of diamond drilling of exploratory wells under the conditions of Yakutia. [Ekonomicheskie rezul'taty vnedreniia novoĭ tekhnologii almaznogo bureniia razvedochnykh skvazhin v usloviiakh IAkutii]
Skriabin, R.M., Ermolaev, K.M., Fiziko-tekhnicheskie problemy osvoeniia mestorozhdeniĭ Severa; sbornik nauchnykh trudov (Physical-technical problems in the development of deposits in the North; collected scientific papers). Edited by B.N. Zarovniaev, Yakutsk, Izd-vo IAkutskogo gosuniversiteta, 1992, p.17-22, In Russian.
Economics, Drills, Cold weather operation, Equipment

50-796
Assembly for studying physical processes during drilling. [Stend dlia issledovanii fizicheskikh protsessov v burenii]
Antipin, I.N., Kochkarev, A.V., Fedorov, L.N., Tolkach, S.M., Fiziko-tekhnicheskie problemy osvoeniia mestorozhdeniĭ Severa; sbornik nauchnykh trudov (Physical-technical problems in the development of deposits in the North; collected scientific papers). Edited by B.N. Zarovniaev, Yakutsk, Izd-vo IAkutskogo gosuniversiteta, 1992, p.23-28, In Russian.
Drilling, Equipment, Physical properties, Cold weather operation, Frozen rocks, Russia—Yakutsk

50-797
Developing a technique of estimating reserves of placer deposits based on optimization of set samples. [Razrabotka metodiki predrascheta zapasov rossypnykh mestorozhdeniĭ na osnove optimizatsii seteĭ oprobovaniia]
Tomskaia, T.N., Fiziko-tekhnicheskie problemy osvoeniia mestorozhdeniĭ Severa; sbornik nauchnykh trudov (Physical-technical problems in the development of deposits in the North; collected scientific papers). Edited by B.N. Zarovniaev, Yakutsk, Izd-vo IAkutskogo gosuniversiteta, 1992, p.28-31, In Russian.
Placer mining, Analysis (mathematics), Mathematical models, Computer applications

50-798
Method of calculating intermediate reserves of mountain massifs during the development of open pit mining of deposits. [Metodika rascheta perekhodiashchikh zapasov gornoĭ massy pri razrabotke mestorozhdeniĭ otkrytym sposobom]
Zarovniaev, B.N., Sovetnikova, V.G., Shmelev, N.P., Fiziko-tekhnicheskie problemy osvoeniia mestorozhdeniĭ Severa; sbornik nauchnykh trudov (Physical-technical problems in the development of deposits in the North; collected scientific papers). Edited by B.N. Zarovniaev, Yakutsk, Izd-vo IAkutskogo gosuniversiteta, 1992, p.31-37, In Russian. 3 refs.
Mining, Analysis (mathematics), Cold weather operation

50-799
Slope engineering of benches using low density explosives in interstitial contours. [Tekhnologiia zaotkoski ustupov nizkoplotnymi VV v promezhutochnykh konturakh]
Shebarshov, A.A., Krutskiĭ, A.A., Fiziko-tekhnicheskie problemy osvoeniia mestorozhdeniĭ Severa; sbornik nauchnykh trudov (Physical-technical problems in the development of deposits in the North; collected scientific papers). Edited by B.N. Zarovniaev, Yakutsk, Izd-vo IAkutskogo gosuniversiteta, 1992, p.37-42, In Russian. 3 refs.
Explosives, Mining, Permafrost

50-800
Experimental analysis of breakup of kimberlites using charges of low density explosives. [Eksperimental'naia otsenka drobimosti kimberlitov zariadami maloplotnykh VV]
Bondarenko, I.F., Fiziko-tekhnicheskie problemy osvoeniia mestorozhdeniĭ Severa; sbornik nauchnykh trudov (Physical-technical problems in the development of deposits in the North; collected scientific papers). Edited by B.N. Zarovniaev, Yakutsk, Izd-vo IAkutskogo gosuniversiteta, 1992, p.42-48, In Russian. 3 refs.
Explosives, Analysis (mathematics), Excavation

50-801

Problems of borehole-blasting excavation in open pit mining. [Problemy BVR pri otkrytoĭ razrabotke mestorozhdeniĭ]

Zarovniaev, B.N., Fiziko-tekhnicheskie problemy osvoeniia mestorozhdeniĭ Severa; sbornik nauchnykh trudov (Physical-technical problems in the development of deposits in the North; collected scientific papers). Edited by B.N. Zarovniaev, Yakutsk, Izd-vo IAkutskogo gosuniversiteta, 1992, p.49-52, In Russian. 8 refs.

Mining, Boreholes, Blasting, Explosives, Permafrost

50-802

Features of borehole blasting excavation of placers in the Far North. [Osobennosti vedeniia burovzryvnykh rabot na priiskakh Kraĭnego Severa]

Dobrovol'skiĭ, G.N., Kipriianov, G.O., Sorokin, V.S., Shubin, G.V., Fiziko-tekhnicheskie problemy osvoeniia mestorozhdeniĭ Severa; sbornik nauchnykh trudov (Physical-technical problems in the development of deposits in the North; collected scientific papers). Edited by B.N. Zarovniaev, Yakutsk, Izd-vo IAkutskogo gosuniversiteta, 1992, p.52-58, In Russian. 4 refs.

Boreholes, Blasting, Placer mining, Cold weather operation, Frozen rocks, Explosives

50-803

Study of blast action from extended explosive charges in frozen cohesive rocks to optimize the parameters in blasting operations. [Issledovanie deĭstviia vzryva udlinennykh zariadov VV v merzlykh sviaznykh porodakh dlia optimizatsii parametrov vzryvnykh rabot]

Kipriianov, G.O., Sorokin, V.S., Shubin, G.V., Fiziko-tekhnicheskie problemy osvoeniia mestorozhdeniĭ Severa; sbornik nauchnykh trudov (Physical-technical problems in the development of deposits in the North; collected scientific papers). Edited by B.N. Zarovniaev, Yakutsk, Izd-vo IAkutskogo gosuniversiteta, 1992, p.58-68, In Russian. 3 refs.

Blasting, Frozen rocks, Explosives, Explosion effects

50-804

Mechanism of breaking up a bench and optimizing the parameters of borehole-blasting excavation. [Mekhanizm razrusheniia ustupa i optimizatsiia parametrov BVR]

Mikhaĭlov, A.G., Fiziko-tekhnicheskie problemy osvoeniia mestorozhdeniĭ Severa; sbornik nauchnykh trudov (Physical-technical problems in the development of deposits in the North; collected scientific papers). Edited by B.N. Zarovniaev, Yakutsk, Izd-vo IAkutskogo gosuniversiteta, 1992, p.68-80, In Russian. 14 refs.

Boreholes, Blasting, Excavation, Analysis (mathematics)

50-805

Study of the technology of supplying sand by powerful bulldozers. [Issledovanie tekhnologii podachi peskov moshchnymi bul'dozerami]

Chemezov, N.N., Fiziko-tekhnicheskie problemy osvoeniia mestorozhdeniĭ Severa; sbornik nauchnykh trudov (Physical-technical problems in the development of deposits in the North; collected scientific papers). Edited by B.N. Zarovniaev, Yakutsk, Izd-vo IAkutskogo gosuniversiteta, 1992, p.81-83, In Russian. 1 ref.

Sands, Construction equipment, Mining

50-806

Multibucket chain dredges and current requirements for working flooded placer deposits. [Mnogocherpakovye tsepnye dragi i sovremennye trebovaniia razrabotki obvodnennykh rossypeĭ]

Knyshenko, N.S., Fiziko-tekhnicheskie problemy osvoeniia mestorozhdeniĭ Severa; sbornik nauchnykh trudov (Physical-technical problems in the development of deposits in the North; collected scientific papers). Edited by B.N. Zarovniaev, Yakutsk, Izd-vo IAkutskogo gosuniversiteta, 1992, p.84-87, In Russian. 3 refs.

Placer mining, Permafrost, Equipment, Machinery

50-807

Calculating the dimensions of a flat pillar. [Raschet razmera lentochnogo tselika]

Kovlekov, I.I., Fiziko-tekhnicheskie problemy osvoeniia mestorozhdeniĭ Severa; sbornik nauchnykh trudov (Physical-technical problems in the development of deposits in the North; collected scientific papers). Edited by B.N. Zarovniaev, Yakutsk, Izd-vo IAkutskogo gosuniversiteta, 1992, p.88-90, In Russian. 2 refs.

Analysis (mathematics), Computer programs, Shafts (excavations), Mine shafts

50-808

Managing the stability of chambered shafts, cut in frozen rock and operating at above-zero thermal regimes. [Upravlenie ustoĭchivost'iu kamernykh vyrabotok, proĭdennykh v merzlykh porodakh i ekspluatiruiushchikhsia v polozhitel'nom teplovom rezhime]

Tiunin, V.P., Kirillov, I.V., Fiziko-tekhnicheskie problemy osvoeniia mestorozhdeniĭ Severa; sbornik nauchnykh trudov (Physical-technical problems in the development of deposits in the North; collected scientific papers). Edited by B.N. Zarovniaev, Yakutsk, Izd-vo IAkutskogo gosuniversiteta, 1992, p.91-93, In Russian. 2 refs.

Frozen rocks, Thermal regime, Shafts (excavations), Mine shafts

50-809

Optimal parameters of the technology for mining gypsum in the Olekminsk mine. [Optimal'nye parametry tekhnologii dobychi gipsa na Olekminskom rudnike]

Kokovin, V.A., Tarasov, I.I., Los', I.N., Fiziko-tekhnicheskie problemy osvoeniia mestorozhdeniĭ Severa; sbornik nauchnykh trudov (Physical-technical problems in the development of deposits in the North; collected scientific papers). Edited by B.N. Zarovniaev, Yakutsk, Izd-vo IAkutskogo gosuniversiteta, 1992, p.93-97, In Russian. 1 ref.

Mining, Permafrost, Analysis (mathematics), Mine shafts

50-810

Recommendations for improving the working capacity of GPKS rock-tunneling machines in perennially frozen placer deposits. [Rekomendatsii po povysheniiu rabotosposobnosti gornoprokhodcheskikh kombaĭnov GPKS v usloviiakh mnogoletnemerzlykh rossypeĭ]

Egorov, I.K., Tarasov, N.I., Fiziko-tekhnicheskie problemy osvoeniia mestorozhdeniĭ Severa; sbornik nauchnykh trudov (Physical-technical problems in the development of deposits in the North; collected scientific papers). Edited by B.N. Zarovniaev, Yakutsk, Izd-vo IAkutskogo gosuniversiteta, 1992, p.98-103, In Russian.

Tunneling (excavation), Machinery, Equipment, Placer mining, Cold weather performance, Frozen rocks

50-811

New non-freezing fluid for a hydraulic system of mechanized supports. [Novaia nezamerzaiushchaia zhidkost' dlia gidrosistem mekhanizirovannykh krepeĭ]

Sleptsov, V.P., Vikulov, M.A., Los', I.N., Rozenbaum, M.A., Fiziko-tekhnicheskie problemy osvoeniia mestorozhdeniĭ Severa; sbornik nauchnykh trudov (Physical-technical problems in the development of deposits in the North; collected scientific papers). Edited by B.N. Zarovniaev, Yakutsk, Izd-vo IAkutskogo gosuniversiteta, 1992, p.104-106, In Russian.

Hydraulics, Liquids, Liquid solid interfaces, Supports

50-812

Features of the breakup of frozen dispersed rocks from their interaction with water. [Osobennosti razrusheniia merzlykh dispersnykh porod pri ikh vzaimodeĭstvii s vodoĭ]

Vychuzhin, T.A., Fiziko-tekhnicheskie problemy osvoeniia mestorozhdeniĭ Severa; sbornik nauchnykh trudov (Physical-technical problems in the development of deposits in the North; collected scientific papers). Edited by B.N. Zarovniaev, Yakutsk, Izd-vo IAkutskogo gosuniversiteta, 1992, p.106-115, In Russian. 9 refs.

Frozen rocks, Rock mechanics, Frozen ground mechanics

50-813

Algorithm for a solution to the axisymmetrical problem of the mechanics of frozen rocks, taking into consideration inelastic deformation. [Algoritm resheniia osesimmetrichnoĭ zadachi mekhaniki merzlykh gornykh porod s uchetom neuprugikh deformatsiĭ]

Sleptsov, V.I., Fiziko-tekhnicheskie problemy osvoeniia mestorozhdeniĭ Severa; sbornik nauchnykh trudov (Physical-technical problems in the development of deposits in the North; collected scientific papers). Edited by B.N. Zarovniaev, Yakutsk, Izd-vo IAkutskogo gosuniversiteta, 1992, p.115-119, In Russian. 7 refs.

Frozen rocks, Deformation, Rock mechanics, Analysis (mathematics)

50-814

Study of the composition of hydrates in natural gas with highly mineralized water. [Issledovanie sostava gidratov prirodnykh gazov s vysokomineralizovannoĭ vodoĭ]

Larionov, V.R., Porokhniak, A.M., Fedoseev, S.M., Aprosimova, S.A., Fiziko-tekhnicheskie problemy osvoeniia mestorozhdeniĭ Severa; sbornik nauchnykh trudov (Physical-technical problems in the development of deposits in the North; collected scientific papers). Edited by B.N. Zarovniaev, Yakutsk, Izd-vo IAkutskogo gosuniversiteta, 1992, p.120-123, In Russian. 4 refs.

Hydrates, Natural gas, Salinity, Water chemistry

50-815

Basis for the effectiveness of using semiconductor heat pumps for mining in the North. [Obosnovanie effektivnosti primeneniia poluprovodnikovykh teplovykh nasosov v gornoĭ promyshlennosti na Severe]

Sleptsov, V.I., Fiziko-tekhnicheskie problemy osvoeniia mestorozhdeniĭ Severa; sbornik nauchnykh trudov (Physical-technical problems in the development of deposits in the North; collected scientific papers). Edited by B.N. Zarovniaev, Yakutsk, Izd-vo IAkutskogo gosuniversiteta, 1992, p.124-129, In Russian. 7 refs.

Heat pumps, Mining, Analysis (mathematics), Cold weather operation, Thermal regime, Mine shafts, Nomographs, Russia—Far North

50-816

Improving operational methods with technological processes for coal mining and work safety in mines in permafrost zones. [Sovershenstvovanie metodov upravleniia tekhnologicheskimi protsessami ugledobychi i bezopasnost'iu truda na shakhtakh v zone mnogoletneĭ merzloty]

Tsygankov, A.V., Fiziko-tekhnicheskie problemy osvoeniia mestorozhdeniĭ Severa; sbornik nauchnykh trudov (Physical-technical problems in the development of deposits in the North; collected scientific papers). Edited by B.N. Zarovniaev, Yakutsk, Izd-vo IAkutskogo gosuniversiteta, 1992, p.130-132, In Russian.

Mining, Permafrost, Safety, Mine shafts

50-817

Mining engineering recultivation of disturbed land under conditions in the North. [Gornotekhnicheskaia rekul'tivatsiia narushennykh zemel' v usloviiakh Severa]

Aleksandrov, I.N., Zakharov, V.I., Fiziko-tekhnicheskie problemy osvoeniia mestorozhdeniĭ Severa; sbornik nauchnykh trudov (Physical-technical problems in the development of deposits in the North; collected scientific papers). Edited by B.N. Zarovniaev, Yakutsk, Izd-vo IAkutskogo gosuniversiteta, 1992, p.132-134, In Russian. 2 refs.

Revegetation, Mining, Engineering, Environmental protection, Russia—Yakutia

50-818

Evaluating the degree of ecological safety of technologies for the mining of mineral deposits. [Otsenka stepeni ekologicheskoĭ opasnosti tekhnologiĭ razrabotki mestorozhdeniĭ poleznykh iskopaemykh]

Tsygankov, A.V., Badaguev, I.V., Fiziko-tekhnicheskie problemy osvoeniia mestorozhdeniĭ Severa; sbornik nauchnykh trudov (Physical-technical problems in the development of deposits in the North; collected scientific papers). Edited by B.N. Zarovniaev, Yakutsk, Izd-vo IAkutskogo gosuniversiteta, 1992, p.135-138, In Russian.

Mining, Safety, Environmental impact, Ecology, Analysis (mathematics), Russia—Yakutia

50-819

Preparation for excavation of frozen sands by using high frequency currents. [Podgotovka k razrabotke merzlykh peskov tokami vysokoĭ chastoty]

Mal'kov, IU.K., Fiziko-tekhnicheskie problemy osvoeniia mestorozhdeniĭ Severa; sbornik nauchnykh trudov (Physical-technical problems in the development of deposits in the North; collected scientific papers). Edited by B.N. Zarovniaev, Yakutsk, Izd-vo IAkutskogo gosuniversiteta, 1992, p.138-145, In Russian. 5 refs.

Sands, Excavation, Frozen ground thermodynamics, Ground thawing, Cost analysis

50-820

Adaptation of mathematical models of heat exchange to specific geocryological conditions for temperature monitoring. [Adaptatsiia matematicheskikh modeleĭ teploobmena k konkretnym geokriologicheskim usloviiam dlia monitoringa temperatury]

Izakson, V.IU., Samokhin, A.V., Shkulev, S.P., Fiziko-tekhnicheskie problemy osvoeniia mestorozhdeniĭ Severa; sbornik nauchnykh trudov (Physical-technical problems in the development of deposits in the North; collected scientific papers). Edited by B.N. Zarovniaev, Yakutsk, Izd-vo IAkutskogo gosuniversiteta, 1992, p.145-153, In Russian. 3 refs.

Heat transfer, Geocryology, Mathematical models, Temperature measurement, Temperature distribution, Permafrost thermal properties, Permafrost heat transfer

50-821

Predicting the Vostok CO_2 curve.

Saltzman, B., Verbitskiĭ, M.IA., *Nature*, Oct. 26, 1995, 377(6551), p.690, 9 refs.

Atmospheric composition, Ice volume, Models, Antarctica—Vostok Station

With additional data from continued drilling of the Vostok ice core, now expected to reach a depth corresponding to 500 kyr ago, the authors offer as a further prediction of their model the expected variation in CO_2 for the additional 300 kyr, shown in a figure accompanying the brief note.

50-822

Quaternary history of Scandinavia.

Donner, J., World and Regional Geology. No.7, Cambridge, Cambridge University Press, 1995, 200p., Refs. p.177-198.

DLC QE696.D66

Geomorphology, Arctic landscapes, Pleistocene, Quaternary deposits, Glacial deposits, Classifications, Marine deposits, Glacier oscillation, Geochronology, Climatic changes, Radioactive age determination, Stratigraphy, Correlation, Denmark, Norway, Sweden, Finland

50-823

Solifluction and climatic variation in the Holocene.

Frenzel, B., ed, Matthews, J.A., ed, Gläser, B., ed, European Science Foundation Scientific Programme Workshop, 9th, Mainz, Germany, Mar. 12-13, 1992. Proceedings, Akademie der Wissenschaften und der Literatur. Vol.11. Paleoclimate research, and European Science Foundation. Special Issue No.6. European palaeoclimate and man, Stuttgart, Gustav Fischer Verlag, 1993, 387p., Refs. passim. For individual papers see 50-824 through 50-849.

DLC QC884.S64

Paleoclimatology, Geomorphology, Climatic changes, Frozen ground mechanics, Geocryology, Soil analysis, Soil dating, Slope processes, Periglacial processes, Solifluction, Switzerland—Alps, Sweden, Norway, Finland

50-824

Holocene solifluction in the Swiss Alps: dating and climatic implications.

Gamper, M., Solifluction and climatic variation in the Holocene. Edited by B. Frenzel et al, Akademie der Wissenschaften und der Literatur. Vol.11., and European Science Foundation. Special issue No.6, Stuttgart, Gustav Fischer Verlag, 1993, p.1-9, With German summary. 25 refs.

DLC QC884.S64

Geomorphology, Paleoclimatology, Alpine landscapes, Glacier oscillation, Climatic changes, Soil formation, Moraines, Solifluction, Soil dating, Radioactive age determination, Periodic variations, Correlation, Switzerland—Alps

50-825

Swiss alpine palaeoclimate during the Holocene: pollen analytical evidence and general features.

Burga, C.A., Solifluction and climatic variation in the Holocene. Edited by B. Frenzel et al, Akademie der Wissenschaften und der Literatur. Vol.11., and European Science Foundation. Special issue No.6, Stuttgart, Gustav Fischer Verlag, 1993, p.11-21, With German summary. Refs. p.17-21.

DLC QC884.S64

Paleoclimatology, Alpine landscapes, Climatic changes, Glacier oscillation, Solifluction, Soil analysis, Paleoecology, Palynology, Periodic variations, Correlation, Switzerland—Alps

50-826

Holocene solifluction in the Austrian and southern Tyrolean Alps: dating and climatic implications.

Veit, H., Solifluction and climatic variation in the Holocene. Edited by B. Frenzel et al, Akademie der Wissenschaften und der Literatur. Vol.11., and European Science Foundation. Special issue No.6, Stuttgart, Gustav Fischer Verlag, 1993, p.23-32, With German summary. 18 refs.

DLC QC884.S64

Paleoclimatology, Climatic changes, Alpine landscapes, Geomorphology, Periglacial processes, Solifluction, Soil formation, Soil dating, Radioactive age determination, Periodic variations, Correlation, Austria—Alps

50-827

Italian research on solifluction in the Alps.

Meneghel, M., Solifluction and climatic variation in the Holocene. Edited by B. Frenzel et al, Akademie der Wissenschaften und der Literatur. Vol.11., and European Science Foundation. Special issue No.6, Stuttgart, Gustav Fischer Verlag, 1993, p.33-36, With German summary. 19 refs.

DLC QC884.S64

Geomorphology, Mountain soils, Alpine landscapes, Solifluction, Periglacial processes, Research projects, Italy—Alps

50-828

Neoglacial gelifluction in the Jostedalsbre region, western Norway: evidence from dated buried soils.

Nesje, A., Solifluction and climatic variation in the Holocene. Edited by B. Frenzel et al, Akademie der Wissenschaften und der Literatur. Vol.11., and European Science Foundation. Special issue No.6, Stuttgart, Gustav Fischer Verlag, 1993, p.37-47, With German summary. 38 refs.

DLC QC884.S64

Geomorphology, Alpine landscapes, Podsol, Soil dating, Radioactive age determination, Periglacial processes, Solifluction, Frozen ground mechanics, Soil creep, Norway

50-829

Holocene solifluction at Okstindan, northern Norway: a reassessment.

Worsley, P., Solifluction and climatic variation in the Holocene. Edited by B. Frenzel et al, Akademie der Wissenschaften und der Literatur. Vol.11., and European Science Foundation. Special issue No.6, Stuttgart, Gustav Fischer Verlag, 1993, p.49-57, With German summary. 14 refs.

DLC QC884.S64

Geomorphology, Mountain soils, Soil mechanics, Solifluction, Soil dating, Stratigraphy, Radioactive age determination, Periglacial processes, Paleoecology, Climatic changes, Forest lines, Correlation, Norway

50-830

Solifluction in northern Finland: past and present.

Seppälä, M., Solifluction and climatic variation in the Holocene. Edited by B. Frenzel et al, Akademie der Wissenschaften und der Literatur. Vol.11., and European Science Foundation. Special issue No.6, Stuttgart, Gustav Fischer Verlag, 1993, p.59-70, With German summary. 26 refs.

DLC QC884.S64

Geomorphology, Alpine landscapes, Periglacial processes, Soil mechanics, Solifluction, Soil classification, Distribution, Periodic variations, Finland

50-831

Holocene mass movement on Scottish mountains: dating, distribution and implications for environmental change.

Ballantyne, C.K., Solifluction and climatic variation in the Holocene. Edited by B. Frenzel et al, Akademie der Wissenschaften und der Literatur. Vol.11., and European Science Foundation. Special issue No.6, Stuttgart, Gustav Fischer Verlag, 1993, p.71-85, With German summary. 25 refs.

DLC QC884.S64

Geomorphology, Mountain soils, Periglacial processes, Soil mechanics, Solifluction, Mass flow, Paleoclimatology, Climatic changes, Soil dating, Periodic variations, United Kingdom—Scotland

50-832

Solifluction and related slope processes in the mountains of central Asia (Mongolia).

Pękala, K., Repelewska-Pękalowa, J., Solifluction and climatic variation in the Holocene. Edited by B. Frenzel et al, Akademie der Wissenschaften und der Literatur. Vol.11., and European Science Foundation. Special issue No.6, Stuttgart, Gustav Fischer Verlag, 1993, p.87-101, With German summary. 35 refs.

DLC QC884.S64

Geomorphology, Mountain soils, Periglacial processes, Cryoturbation, Slope processes, Solifluction, Paleoecology, Paleoclimatology, Climatic changes, Mongolia

50-833

Solifluction in northern Eurasia: a review.

Serebriannyĭ, L.R., Gravis, G.F., Solifluction and climatic variation in the Holocene. Edited by B. Frenzel et al, Akademie der Wissenschaften und der Literatur. Vol.11., and European Science Foundation. Special issue No.6, Stuttgart, Gustav Fischer Verlag, 1993, p.103-121, With German summary. 21 refs.

DLC QC884.S64

Geomorphology, Periglacial processes, Solifluction, Soil mechanics, Cryogenic soils, Soil dating, Radioactive age determination, Correlation, Paleoclimatology, Russia

50-834
Solifluction and climate in the Holocene: a North American perspective.
Smith, D.J., Solifluction and climatic variation in the Holocene. Edited by B. Frenzel et al, Akademie der Wissenschaften und der Literatur. Vol.11., and European Science Foundation. Special issue No.6, Stuttgart, Gustav Fischer Verlag, 1993, p.123-141, With German summary. 46 refs.
DLC QC884.S64
Geomorphology, Solifluction, Soil dating, Geochronology, Soil mechanics, Climatic changes, Paleoclimatology, Canada

50-835
Postglacial avalanche activity in western Norway: depositional facies sequences, chronostratigraphy and palaeoclimatic implications.
Blikra, L.H., Nemec, W., Solifluction and climatic variation in the Holocene. Edited by B. Frenzel et al, Akademie der Wissenschaften und der Literatur. Vol.11., and European Science Foundation. Special issue No.6, Stuttgart, Gustav Fischer Verlag, 1993, p.143-162, 18 refs.
DLC QC884.S64
Paleoclimatology, Mass flow, Avalanche deposits, Mountain soils, Geomorphology, Geochronology, Stratigraphy, Glacier oscillation, Slope processes, Correlation, Norway

50-836
Slope processes and climate in the Abisko Mountains, northern Sweden.
Rapp, A., Åkerman, H.J., Solifluction and climatic variation in the Holocene. Edited by B. Frenzel et al, Akademie der Wissenschaften und der Literatur. Vol.11., and European Science Foundation. Special issue No.6, Stuttgart, Gustav Fischer Verlag, 1993, p.163-177, 20 refs.
DLC QC884.S64
Climatic changes, Mountain soils, Alpine landscapes, Geomorphology, Solifluction, Periglacial processes, Slope processes, Periodic variations, Correlation, Sweden—Abisko Mountains

50-837
Holocene debris-flow activity in northern Sweden.
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DLC QC884.S64
Geomorphology, Periglacial processes, Slope processes. Mass flow, Solifluction, Sedimentation, Lacustrine deposits, Periodic variations, Climatic changes. Correlation, X ray analysis, Sweden

50-838
Solifluction forms, their distribution and climatic relationships—an overview of present-day conditions with particular reference to the Swiss Alps and the tropical Andes.
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DLC QC884.S64
Geomorphology, Mountain soils, Alpine landscapes, Periglacial processes, Solifluction, Classifications, Distribution, Patterned ground, Climatic changes, Switzerland—Alps, Bolivia—Andes Mountains

50-839
Understanding the controls on solifluction movements in different environments: a methodology and its application in the French Alps.
Pissart, A., Solifluction and climatic variation in the Holocene. Edited by B. Frenzel et al, Akademie der Wissenschaften und der Literatur. Vol.11., and European Science Foundation. Special issue No.6, Stuttgart, Gustav Fischer Verlag, 1993, p.209-215, 5 refs.
DLC QC884.S64
Alpine landscapes, Geomorphology, Periglacial processes, Slope processes, Solifluction, Sediment transport, Soil analysis, Statistical analysis, Correlation, Climatic factors, France—Alps

50-840
Solifluction in the Swedish mountains: distribution in relation to vegetation and snow cover.
Ulfstedt, A.C., Solifluction and climatic variation in the Holocene. Edited by B. Frenzel et al, Akademie der Wissenschaften und der Literatur. Vol.11., and European Science Foundation. Special issue No.6, Stuttgart, Gustav Fischer Verlag, 1993, p.217-223, 3 refs.
DLC QC884.S64
Geomorphology, Mountain soils, Periglacial processes, Solifluction, Distribution, Vegetation factors, Vegetation patterns, Ecosystems, Snow cover effect, Correlation, Sweden

50-841
Solifluction and creep rates 1972-1991, Kapp Linné, West Spitsbergen.
Åkerman, H.J., Solifluction and climatic variation in the Holocene. Edited by B. Frenzel et al, Akademie der Wissenschaften und der Literatur. Vol.11., and European Science Foundation. Special issue No.6, Stuttgart, Gustav Fischer Verlag, 1993, p.225-249, 28 refs.
DLC QC884.S64
Arctic landscapes, Geomorphology, Slope processes, Classifications, Soil analysis, Solifluction, Sorting, Periglacial processes, Periodic variations, Climatic factors, Correlation, Norway—Spitsbergen

50-842
Influence of local factors on solifluction rates, Spitsbergen, Svalbard.
Repelewska-Pękalowa, J., Pękala, K., Solifluction and climatic variation in the Holocene. Edited by B. Frenzel et al, Akademie der Wissenschaften und der Literatur. Vol.11., and European Science Foundation. Special issue No.6, Stuttgart, Gustav Fischer Verlag, 1993, p.251-266, 39 refs.
DLC QC884.S64
Arctic landscapes, Tundra soils, Geomorphology, Slope processes, Periglacial processes, Permafrost structure, Active layer, Ground thawing, Solifluction, Periodic variations, Norway—Spitsbergen

50-843
Solifluction and thermal erosion in high arctic ecosystems, northern Spitsbergen: processes and effects.
King, L., Schmitt, E., Solifluction and climatic variation in the Holocene. Edited by B. Frenzel et al, Akademie der Wissenschaften und der Literatur. Vol.11., and European Science Foundation. Special issue No.6, Stuttgart, Gustav Fischer Verlag, 1993, p.267-278, 12 refs.
DLC QC884.S64
Arctic landscapes, Ecosystems, Geomorphology, Periglacial processes, Substrates, Solifluction, Ground ice, Vegetation patterns, Landscape development, Correlation, Norway—Svalbard

50-844
Solifluction activity in the North Atlantic Arctic and subarctic: the microstratigraphic record of changing climate during the second half of the Holocene.
Van Vliet-Lanoë, B., Solifluction and climatic variation in the Holocene. Edited by B. Frenzel et al, Akademie der Wissenschaften und der Literatur. Vol.11., and European Science Foundation. Special issue No.6, Stuttgart, Gustav Fischer Verlag, 1993, p.279-294, 58 refs.
DLC QC884.S64
Climatic changes, Arctic landscapes, Geomorphology, Solifluction, Periglacial processes, Soil formation, Stratigraphy, Snow cover effect, Vegetation factors, Correlation, Periodic variations

50-845
Role of climate and soil properties in periglacial solifluction: evidence from laboratory simulation experiments.
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DLC QC884.S64
Paleoclimatology, Periglacial processes, Slope processes, Solifluction, Ice lenses, Thermal regime, Mass flow, Frozen ground mechanics, Frost heave, Climatic changes, Simulation

50-846
Radiocarbon dating of buried soils with particular reference to Holocene solifluction.
Matthews, J.A., Solifluction and climatic variation in the Holocene. Edited by B. Frenzel et al, Akademie der Wissenschaften und der Literatur. Vol.11., and European Science Foundation. Special issue No.6, Stuttgart, Gustav Fischer Verlag, 1993, p.309-324, 26 refs.
DLC QC884.S64
Soil dating, Soil physics, Geomorphology, Periglacial processes, Solifluction, Radioactive age determination, Substrates, Accuracy

50-847
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McCarroll, D., Solifluction and climatic variation in the Holocene. Edited by B. Frenzel et al, Akademie der Wissenschaften und der Literatur. Vol.11., and European Science Foundation. Special issue No.6, Stuttgart, Gustav Fischer Verlag, 1993, p.325-337, Refs. p.332-337.
DLC QC884.S64
Slope processes, Arctic landscapes, Periglacial processes, Soil dating, Weathering, Geomorphology, Landforms, Lichens, Accuracy

50-848
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DLC QC884.S64
Geomorphology, Periglacial processes, Solifluction, Periodic variations, Climatic changes, Mass flow, Soil dating, Radioactive age determination, Paleoclimatology, Accuracy

50-849
Climatic controls on rates of solifluction: variations within Europe.
Matthews, J.A., Berrisford, M.S., Solifluction and climatic variation in the Holocene. Edited by B. Frenzel et al, Akademie der Wissenschaften und der Literatur. Vol.11., and European Science Foundation. Special issue No.6, Stuttgart, Gustav Fischer Verlag, 1993, p.363-382, 36 refs.
DLC QC884.S64
Geomorphology, Arctic landscapes, Alpine landscapes, Solifluction, Periglacial processes, Climatic changes, Temperature effects, Snow cover effect, Periodic variations, Correlation, Paleoclimatology

50-850
Implementation plan for enhancements to Trans-Alaska Pipeline System oil spill contingency plan—pipeline.
Aliyeska Pipeline Service Company, Anchorage, AK, Apr. 1991, 75p., Revision 1 to Document number CP-35-IMP.
DLC TD196.P4A49 1991
Pipelines, Oil spills, Soil pollution, Oil recovery, Land reclamation, Environmental protection, Safety, Regional planning, United States—Alaska

50-851
Seismic refraction soundings 1993 on rock glacier permafrost in north-western Svalbard.
Wagner, S., *Zürich. Eidgenössische Technische Hochschule. Versuchsanstalt für Wasserbau, Hydrologie und Glaziologie. Arbeitsheft,* June 1995, No.17, 30p., 21 refs.
Seismic surveys, Echo sounding, Rock glaciers, Glacier surveys, Glacier thickness, Glacier flow, Glacier beds, Permafrost surveys, Active layer, Soil creep, Norway—Svalbard

50-852
Observation guidelines and recording standards for weather, snowpack and avalanches.
Canadian Avalanche Association, Revelstoke, British Columbia, May 1995, 97p., 14 refs. Revision of National Research Council Canada, NRCC technical memorandum, No.132. For 1st edition see 37-2486 and 2nd edition see 44-2082.
Snow surveys, Snow cover stability, Avalanche forecasting, Avalanche triggering, Avalanche tracks, Accidents, Safety, Manuals

50-853
Field measurements of ice loads: thermal loads on hydro-electric structures.
Comfort, G., Abdelnour, R., Canadian Dam Safety Conference, Winnipeg, Manitoba, Oct. 1994. Proceedings, Richmond, British Columbia, BiTech Publishers Ltd., 1994, p.35-51, With French summary. 6 refs.
Reservoirs, Lake ice, Ice loads, Ice pressure, Ice temperature, Thermal expansion, Thermal stresses, Hydraulic structures, Water intakes, Dams, Canada—Quebec

50-854
Permafrost and the environment in Alaska.
Lotspeich, F.B., *U.S. Environmental Protection Agency. Arctic Environmental Research Laboratory, College, AK. Working paper,* Mar. 1973, No.18, 26p., 12 refs.
Permafrost thermal properties, Permafrost heat transfer, Permafrost hydrology, Permafrost preservation, Frozen ground strength, Ground thawing, Thaw weakening, United States—Alaska

50-855
Study of multi-year pressure ridges and shore ice pile-up.
Kovacs, A., MP 3696, APOA Project 89, Calgary, Alberta, Arctic Petroleum Operators Association, Oct. 1975, 45p., 16 refs. For another version see 34-774.
Fast ice, Ice scoring, Ice pileup, Pressure ridges, Ice cover thickness, Beaufort Sea

50-856
Shore ice pile-up and ride-up: field observations, models, theoretical analyses.
Kovacs, A., Sodhi, D.S., MP 3697, Hanover, NH, U.S. Army Cold Regions Research and Engineering Laboratory, 1979, 84p., Refs. p.76-84. For another version see 34-3631.
Fast ice, Ice push, Ice pileup, Ice override, Ice loads, Ice pressure, Ice friction
A review of the literature on shore ice pile-up and ride-up in arctic and subarctic waters is presented, along with an account of recent observations made by the authors. Cross-sectional profiles of these features are presented from which models and theoretical analyses were made. The expressions derived give the force required to overcome gravitational potential and friction occurring during ice-piling and ride-up. It was found that the total force required during ice-piling or ride-up was of the order of 10 to 350 kPa (about 1.5 to 50 psi). Field observations revealed that shore ice pile-up or ride-up appears to occur within a period of less than 30 minutes, at any time of year but most often in the spring and fall. Pile-up seldom occurs more than 10 m inland from the sea but ride-up frequently extends 50 m or more inland, regardless of ice thickness. While steeply sloping shores do not favor ice ride-up, sea ice has mounted the steep, 9-m high bluff at Barrow, AK, destroying structures and taking lives.

50-857
Ice-age history of Alaskan national parks.
Elias, S.A., Washington, D.C., Smithsonian Institution Press, 1995, 150p., Refs. passim.
DLC E78.A3E45 1995
Paleoecology, Pleistocene, Fossils, Paleoclimatology, Glacial geology, Quaternary deposits, United States—Alaska

50-858
Runup and overtopping of impulse waves on dams. [Auflaufen und Überschwappen von Impulswellen an Talsperren]
Müller, D.R., *Zürich. Eidgenössische Technische Hochschule. Versuchsanstalt für Wasserbau, Hydrologie und Glaziologie. Mitteilungen,* 1995, No.137, 201p. + appends., In German with French and English summaries. Refs. p.188-201.
Dams, Water waves, Shock waves, Wave propagation, Flood control, Flood forecasting, Avalanche mechanics, Avalanche modeling, Ice cover effect, Mathematical models

50-859
Relationship between recruitment of the antarctic krill and the degree of ice cover near the Shetland Islands.
Kawaguchi, S., Satake, M., *Fisheries science,* Feb. 1994, Vol.60, p.123-124, 7 refs.
Marine biology, Sea ice distribution, Antarctica—South Shetland Islands
Data on krill size during the fishing season from trawler log books and winter sea ice cover during the period 1979 through 1992 from records of the NAVY-NOAA Joint Ice Center were used to establish a relationship between krill abundance and sea ice cover. A general conclusion may be drawn that heavy ice cover in the austral winter leads to a relatively high abundance of the small-krill population.

50-860
Ice load impact study on the National Science Foundation's Research Vessel *Nathaniel B. Palmer.*
St. John, J.W., Minnick, P.V., Washington, D.C., U.S. Coast Guard, Ship Structure Committee, 1995, 174p., USCG SSC-376, 13 refs.
Ships, Design criteria, Sea ice, Icebreakers, Ice breaking, Antarctica—Weddell Sea, Antarctica—South Shetland Islands, Antarctica—South Orkney Islands
This report presents the results of full-size ice impact testing done on the National Science Foundation's new research vessel, the *Nathaniel B. Palmer.* The vessel strain gauging was planned and installed during its construction, and ice impact strain recording was conducted during initial ice trials in Aug. 1992. These data were complemented by the instrumentation and measurement of the propulsion machinery performance, measurement of sea ice properties, and measurement of ship performance in open water. The results were compared to those of earlier similar studies done on the Swedish icebreaker *Oden* and the USCGC *Polar Sea.* The *Polar Sea* is of similar form to the *Palmer,* but has twice the displacement. The *Oden* has a similar displacement to the *Polar Sea,* but has a different style of icebreaking bow. By comparing the results of the three vessels the authors have provided full-scale justifications for future icebreaking design.

50-861
Veneto's glaciers. [I ghiacciai del Veneto]
Zanon, G., Giunta regionale del Veneto, Treviso, Canova, 1990, 79p., In Italian. 40 refs.
DLC GB2500.V46Z36
Glaciers, Glacier surveys, Mountain glaciers, Topographic maps, Topographic surveys, Italy

50-862
Vegetation and paleoclimatology of the Middle Holocene of a former peat bog situated at the front of the Rutor Glacier, 2510 m (Valle d'Aosta, Italy). [Végétation et paléoclimatologie de l'Holocène moyen d'une ancienne tourbière située au front du Glacier Rutor, 2510 m (Vallée d'Aoste, Italie)]
Burga, C.A., *Revue de géographie alpine,* 1995, 83(1), p.9-16, In French with English summary. 7 refs.
Paleoclimatology, Alpine landscapes, Paleoecology, Glacial deposits, Glacier oscillation, Sedimentation, Vegetation patterns, Palynology, Peat, Italy—Rutor Glacier

50-863
Avalanche book.
Armstrong, B.R., Williams, K., Golden, Fulcrum Publishing, 1992, 240p., Revised edition. Refs. p.225-230.
DLC QC929.A8 A69
Avalanche formation, Avalanche mechanics, Avalanche engineering, Safety, Countermeasures, Forecasting, Education, Legislation, Survival, Research projects

50-864
Biodiversity of gas vacuolate bacteria from antarctic sea ice and water.
Gosink, J.J., Staley, J.T., *Applied and environmental microbiology,* Sep. 1995, 61(9), p.3486-3489, 19 refs.
Bacteria, Microbiology, Sea ice, Sea water, Antarctica—Palmer Station, Antarctica—McMurdo Station
Psychrophilic, gas vacuolate, heterotrophic bacteria indigenous to sea ice communities in Antarctica have been isolated. Phylogenetic analysis of representative members of these bacteria shows that they belong to the alpha, beta, and gamma *Proteobacteria* and the *Flavobacteria-Cytophaga* group. This is the first report of gas vacuolate bacteria from the beta *Proteobacteria* and the *Flavobacteria-Cytophaga* groups. (Auth.)

50-865
Antarctic jets.
Burkov, V.A., *Oceanology,* Mar.-Apr. 1994, 34(2), p.145-153, Translated from Okeanologiia. 20 refs.
Oceanography, Ocean currents, Hydrography, Wind factors, Velocity measurement
Jets of the Antarctic Circumpolar Current (ACC) corresponding to the subantarctic (SAF) and polar (PF) fronts, and two jets within the antarctic zone (AZ) are investigated along 13 meridional sections along the AZZ. These jets are steady individual structures with maximum speeds in sections perpendicular to the ACC. The jets are separated by bands of very low speeds. The morphometric and kinematic characteristics of jets are given. It is hypothesized that formation of SAF and PF jets is caused by seasonal longitudinal displacement of the western wind maximum over the southern ocean. (Auth. mod.)

50-866
Relationship between characteristics of the mesoscale and the fine structure in the antarctic polar front zone.
Shapiro, G.I., Emel'ianov, M.V., *Oceanology,* Mar.-Apr. 1994, 34(2), p.180-185, Translated from Okeanologiia. 13 refs.
Oceanography, Hydrography, Salinity, Water temperature, Stratification, Spectra
The mesoscale and fine structure of the thermohaline field in the frontal zone north of South Georgia I. are investigated. The parameters of the main fronts, meanders and isolated cold patches are determined. Absolute and relative mesoscale characteristics of the polar front zone (PFZ) are analyzed and their relations with fine structure parameters are revealed. A method of quasispectral analysis of thermohaline fine structure is proposed. This method makes it possible to calculate the thickness of the layer of vertical movements and the intensity of diapycnal and isopycnal mixing. It is shown that the weak stratification of the antarctic waters to the south of the PFZ corresponds to the intensity of diapycnal processes. (Auth. mod.)

50-867
Seasonal variations of mesoplankton biomass in the surface layer of the Bering Sea and the northwest Pacific.
Tseĭtlin, V.B., Kitain, V.IA., Rudiakov, IU.A., *Oceanology,* Mar.-Apr. 1994, 34(2), p.221-224, Translated from Okeanologiia. 15 refs.
Oceanography, Marine biology, Plankton, Biomass, Statistical analysis, Seasonal variations, Bering Sea

50-868
Changes in the age composition of dominant copepod species in the Cooperation Sea, (Antarctica) in 1977-1990.
Budnichenko, E.V., *Oceanology,* Mar.-Apr. 1994, 34(2), p.225-231, Translated from Okeanologiia. 15 refs.
Oceanography, Marine biology, Plankton, Age determination, Sampling, Classifications, Statistical analysis, Seasonal variations, —Indian Ocean
The interannual variability of the age composition and developmental periods in different water masses are given for the dominant copepod species *Calanoides acutus, Calanus propinquus,* and *Rhincalanus gigas.* The main differences of copepod age composition occur between the northern (Antarctic Circumpolar Current) and the southern (antarctic coastal current) regions. In the north copepods develop earlier than in the south. Distinctions of the species composition in waters of different types are shown. *C. acutus* and *C. propinquus* are widely distributed in three water masses, each with different age composition. (Auth. mod.)

50-869
Comprehensive ecological investigations in the Bering Sea and The Sea of Okhotsk (24th cruise of R/V *Akademic Aleksandr Nesmeyanov,* 25 June-20 August 1993).
Sapozhnikov, V.V., *Oceanology,* Mar.-Apr. 1994, 34(2), p.281-284, Translated from Okeanologiia.
Oceanographic surveys, Oceanography, Hydrography, Marine biology, Ecology, Ecosystems, Biomass, Bering Sea

50-870

Microfaunal response to fertilization of an arctic tundra stream.

Rublee, P.A., Partusch-Talley, A., *Freshwater biology,* Aug. 1995, 34(1), p.81-90, 50 refs.

Tundra terrain, Limnology, Streams, Water chemistry, Nutrient cycle, Ecology, Biomass, Ecosystems, Microbiology

50-871

Structural isotope effect in water bilayers adsorbed on RU(001).

Held, G., Menzel, D., *Physical review letters,* May 22, 1995, 74(21), p.4221-4224, 11 refs.

Water structure, Molecular structure, Hydrogen bonds, Low temperature tests, Adsorption, Isotopes, Molecular energy levels, Electron microscopy

50-872

Handwarmers benefit young citrus trees during freezes.

Parsons, L.R., Wheaton, T.A., Yelenosky, G., *Hortscience,* Apr. 1995, 30(2), p.231-233, 5 refs.

Trees (plants), Insulation, Frost resistance, Plant tissues, Surface temperature, Temperature control, Cold weather tests, Cold weather survival, Heating

50-873

Revision of *Antennaira isolepsis, A. Pallida, A. pedunculata,* and *A. rousseaui* (Asteraceae: Inuleae):apomictic North American arctic-alpine species.

Chmielewski, J.G., *American journal of botany,* Aug. 1995, 82(8), p.1049-1055, 58 refs.

Plants (botany), Ecology, Distribution, Structural analysis, Classifications

50-874

How to make a palsa: a field experiment on permafrost formation.

Seppälä, M., *Zeitschrift für Geomorphologie. Supplementband.* 1995, Vol.99, p.91-96, With German summary. 14 refs.

Geocryology, Subarctic landscapes, Geomorphology, Periglacial processes, Frozen ground physics, Frost mounds, Discontinuous permafrost, Snow depth, Snow cover effect, Wind factors, Simulation

50-875

Evaluation procedures for deicing chemicals and improved sodium chloride.

Chappelow, C.C., McElroy, A.D., Blackburn, R.R., Cooper, G.R., Pinzino, C.S., National Research Council. Strategic Highway Research Program. Report SHRP-H-467, Washington, D.C., National Academy of Sciences, 1993, Var.p., PB94-189 495, 46 refs.

DLC TE270.S69 Vol.5

Road icing, Road maintenance, Ice removal, Chemical ice prevention, Antifreezes, Corrosion, Salting, Ice melting, Ice solid interface, Mechanical tests, Environmental impact, Chemical composition, Standards

50-876

Ice-pavement bond disbonding—fundamental study.

Blackburn, R.R., Ashworth, T., Schmidt, C.G., Kinzig, B.J., National Research Council. Strategic Highway Research Program. Report SHRP-H-643, Washington, D.C., National Academy of Sciences, 1993, 433p., PB94-182 466, 37 refs.

DLC TE270.S69 Vol.4

Road icing, Ice formation, Road maintenance, Pavements, Substrates, Ice removal, Chemical ice prevention, Ice deterioration, Ice solid interface, Ice strength, Shear stress, Surface roughness, Ice mechanics, Mechanical tests

50-877

Post-yield strength of icebreaking ship structural members.

DesRochers, C.G., Crocker, E.J., Kumar, R., Brennan, D.P., Dick, B., Lantos, S., Transport Canada. Publication No.11837E. U.S. Coast Guard. Ship Structure Committee Report No.384, Washington, D.C., Oct. 1995, 286p., PB96-109129, 32 refs.

Icebreakers, Plates, Shells, Structural analysis, Deformation, Stress concentration, Flexural strength, Fatigue (materials), Ice loads, Simulation, Standards, Design criteria

50-878

Persistence of white phosphorus particles in sediment.

Walsh, M.E., Collins, C.M., Racine, C.H., CR 95-23, *U.S. Army Cold Regions Research and Engineering Laboratory. Report,* Nov. 1995, 46p., ADA-303 741, 49 refs.

Sediments, Soil pollution, Environmental impact, Wetlands, Ponds, Levees, Particles, Moisture, United States—Alaska—Eagle River Flats

Remediation of sediments at Eagle River Flats, a salt marsh contaminated with particles of white phosphorus (P_4), may require severe alterations of the wetland by dredging, draining or covering. However, some sediments may undergo decontamination naturally in areas that are seasonally exposed to air. To predict the persistence of white phosphorus particles in sediments, a literature review was conducted for the physical and chemical properties of white phosphorus. The persistence of millimeter-size white phosphorus particles was studied by laboratory and field experiments. White phosphorus particles were found to be persistent indefinitely in saturated sediments. In unsaturated sediments, loss was rapid (within 24 hours) at 20°C but retarded by low temperatures.

50-879

Sensible heat flux measurements near a cold surface.

Yen, Y.-C., CR 95-22, *U.S. Army Cold Regions Research and Engineering Laboratory. Report,* Oct. 1995, 43p., ADA-304 592, Refs. p.40-43.

Heat flux, Temperature variations, Turbulence, Velocity measurement, Wind velocity, Anemometers, Snow cover effect, Air temperature, Atmospheric boundary layer, Analysis (mathematics), Frozen ground

A unidirectional sonic anemometer with a fine-wire thermocouple in conjunction with a hot film anemometer were employed to measure the turbulent fluctuating velocities of w', u', and the fluctuating temperature T'. Covariance were evaluated to compute the turbulent heat flux and the friction velocity. Based on preliminary data, it can be noted that the values of fluctuating vertical velocity and temperature, the friction velocity, and the standard deviations of vertical and horizontal turbulent fluctuating velocities can all be correlated rather well with a single variable, i.e., the mean wind speed measured at a height of 2 m. In all the plots of friction velocity, vertical and horizontal turbulent fluctuating velocities, and the fluctuating vertical velocity and temperature vs. the mean wind speed at 2 m, the slopes are slightly lowered as the test season progressed from early summer to the winter. The most striking reduction can be observed in the case of the fluctuating vertical and velocity and temperature vs. mean wind speed at 2 m. During the winter period, the slope is only about one third of that during the spring-summer period. In other words, under unstable conditions, for the same mean wind speed, the heat flux during the winter is only about one third of the flux that would have occurred during the spring-summer. Under stable conditions, the magnitude of the fluctuating vertical velocity and temperature is much smaller, and its value shows much greater dispersion.

50-880

Silt fence testing for Eagle River Flats dredging.

Henry, K.S., Hunnewell, S.T., SR 95-27, *U.S. Army Cold Regions Research and Engineering Laboratory. Special Report,* Dec. 1995, 12p., ADA-304 936, 8 refs.

Dredging, Military operation, Environmental impact, Geotextiles, Filters, United States—Alaska—Eagle River Flats

An estimated 1,000 to 2,000 waterfowl deaths have been noted annually since 1980 in Eagle River Flats (ERF), AK, an artillery impact area used by the Army. Waterfowl die because of the ingestion of unburned white phosphorus (WP) particles deposited by incendiary. Remediation of the site is currently being planned, and one of the techniques being considered is the use of a remote-control dredge to excavate WP-contaminated sediment. Dredged material will be placed into a settling pond and allowed to settle until a clear layer of water forms on the top of the sediments. The water will than be released over a weir, across a concrete pad, through a geotextile silt fence to a drain into the ERF. This report describes tests that were conducted to evaluate how well candidate geotextiles for the silt fence retained small particles (d<1 mm) that were suspended in water being released back into the ERF. The soil used in the tests was collected from ponds to be dredged. The testing program consisted of two parts. Part I tests were standard engineering tests for silt fences, and were used to select a product for further testing. Part II tests simulated field conditions and were conducted to determine whether the candidate geotextile selected was likely to perform well. In the tests that simulated field conditions, those that used geotextiles achieved system filtering efficiencies of 99%, and the geotextile filter reduced the final total suspended solids contained in the water by a factor of 10. Negligible amounts of soil passed the #200 sieve from water that flowed through the geotextile. However, it is also noted that allowing the sediment to settle before decanting the water resulted in system filtering efficiencies in excess of 90% when a silt fence was not used in the test. Due to differences between lab and field use of this product, several recommendations are made to help ensure the proper functioning of the geotextile when used in Eagle River Flats.

50-881

Arctic marine mammals as integrators and indicators of mercury in the Arctic.

Wagemann, R., Lockhart, W.L., Welch, H., Innes, S., *Water, air, and soil pollution,* Feb. 1995, 80(1-4), International Conference on Mercury as a Global Pollutant, 3rd, Whistler, British Columbia, Canada, July 10-14, 1994. Proceedings, p.683-693, 23 refs.

Oceanography, Ecosystems, Marine biology, Sampling, Water pollution, Air pollution, Correlation, Environmental tests, Environmental impact, Arctic Ocean

50-882

Glacial dispersal of mercury from bedrock mineralization along Pinchi Fault, north central British Columbia.

Plouffe, A., *Water, air, and soil pollution,* Feb. 1995, 80(1-4), International Conference on Mercury as a Global Pollutant, 3rd, Whistler, British Columbia, Canada, July 10-14, 1994. Proceedings, p.1109-1112, 10 refs.

Glacial geology, Bedrock, Mineralogy, Sediment transport, Glacial deposits, Sampling, Geochemistry, Canada—British Columbia

50-883

Degradation of Arctic ice cap islands during climatic warming (in the example of Severo-Vostochnaya Zemlya). [Degradatsiia ostrovykh lednikovykh kupolov Arktiki pri poteplenii klimata (na primere Severo-Vostochnoĭ Zemli)]

Ignat'eva, I.IU., Macheret, IU.IA., *Rossiĭskaia akademiia nauk. Izvestiia. Seriia geograficheskaia,* Jan.-Feb. 1993, No.1, p.81-90, In Russian. 17 refs.

Ice cover, Degradation, Ice cover thickness, Mass balance, Glacier flow, Climatic factors, Global warming, Ablation, Air temperature, Norway—Nordaustlandet

50-884

Submerged offshore structures for Perry Nuclear Power Plant Units 1 & 2, Cleveland Electric Power Company.

Wahanik, R.J., Fromuth, R.K., Reading, PA, Gilbert Associates, Inc., Mar. 1976, Var. p., GAI report No.1891, Refs. passim.

Lake ice, Frazil ice, Ice conditions, Ice loads, Ice control, Ice prevention, Hydraulic structures, Water intakes, United States—Ohio—Erie, Lake

50-885

Work suspended as Pisa delivers surprise.

Wheeler, P., *Ground engineering,* Oct. 1995, p.4.

Artificial freezing, Soil stabilization, Towers, Foundations, Anchors, Italy

50-886

Standard test methods for tire performance testing on snow and ice surfaces.

American Society for Testing and Materials, Annual book of ASTM standards. ASTM designation F 1572-94, Philadelphia, PA, 1995, 7p., Refs. passim.

Road icing, Tires, Rubber ice friction, Skid resistance, Traction, Cold weather tests, Standards

50-887

Sediment distribution and sea-floor morphology of Storbanken: implications for the glacial history of the northern Barents Sea.

Solheim, A., Milliman, J.D., Elverhøi, A., *Canadian journal of earth sciences,* Apr. 1988, 25(4), p.547-556, With French summary. 40 refs.

Glaciation, Glacial deposits, Marine deposits, Marine geology, Ocean bottom, Bottom sediment, Bottom topography, Ice scoring, Geochronology, Paleoclimatology, Barents Sea

50-888

Environmentally caused variation in exterior intrusion detection.

Peck, L., MP 3698, European Convention on Security and Detection, Brighton, England, May 16-18, 1955, London, Institution of Electrical Engineers, 1955, p.167-171, 2 refs.

Warning systems, Infrared reconnaissance, Detection, Sensors, Snow optics, Snow cover effect

50-889

River ice motion detector.

Zufelt, J.E., Clark, C.H., Deck, D.S., MP 3699, *U.S. Patent Office. Patent,* Aug. 29, 1995, 6 col., USP-5,446,448, 7 refs.

River ice, Ice breakup, Ice jams, Ice detection, Ice reporting, Ice forecasting, Flood forecasting, Warning systems, Data transmission

A river ice motion detector system for detecting ice run conditions in order to warn communities downstream that flooding from ice jams is possible, comprises a voltage source, a multi-meter, a detector unit and a plurality of sensor loops, all having communication with each other. The voltage source provides an input signal to the detector unit and then to the sensor loops. The sensor loops provides a second signal back to the multi-meter in response to the input signal. The detector unit has a plurality of resistors and a plurality of switches, the values of the resistors determined providing large step differences, allowing the detector unit to determine which of the sensor loops is broken indicating a possible ice run. The switches are normally closed, providing a test for the system when the switches are deliberately opened.

50-890

Optimal structural damping of skis using a genetic algorithm.

Marcelin, J.L., Trompette, P., Dornberger, R., *Structural optimization,* 1995, Vol.10, p.67-70, 5 refs.

Skis, Composite materials, Wood snow friction, Plastics snow friction

50-891

Optimization of a racing ski.

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Skis, Wood snow friction, Plastics snow friction

50-892

Cenozoic plants and climates of the Arctic.

Boulter, M.C., ed, Fisher, H.C., ed, North Atlantic Treaty Organization. Advanced Science Institutes. NATO ASI Series I: Global environmental change, Vol.27, Berlin, Springer-Verlag, 1994, 401p., Refs. passim. Proceedings of the NATO Advanced Research Workshop on Reconstruction of North Atlantic Climate Change Using Extinct Plant Data, London, Nov. 11-16, 1993. For individual papers see 50-893 through 50-918.

DLC QE934.C46 1994

Paleobotany, Paleoecology, Paleoclimatology, Plant ecology, Vegetation patterns, Biogeography, Fossils, Geochronology, Global change

50-893

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Paleobotany, Paleoecology, Paleoclimatology, Global change, Plant ecology, Vegetation patterns, Forest ecosystems, Fossils, Geochronology

50-894

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Paleobotany, Paleoecology, Paleoclimatology, Plant ecology, Vegetation patterns, Forest ecosystems, Fossils

50-895

Palaeo-ecophysiological studies on cretaceous and tertiary fossil floras.

Beerling, D.J., Cenozoic plants and climates of the Arctic. North Atlantic Treaty Organization. Advanced Science Institutes. NATO ASI Series I, Vol.27. Edited by M.C. Boulter and H.C. Fisher, Berlin, Springer-Verlag, 1994, p.23-33, 45 refs.

Paleobotany, Paleoecology, Paleoclimatology, Plant ecology, Plant physiology, Plant tissues, Transpiration, Nuuient cycle, Atmospheric composition, Carbon dioxide, Global change

50-896

Cenozoic tectono-magmatic events in the North Atlantic: potential paleoenvironmental implications.

Eldholm, O., Myhre, A.M., Thiede, J., Cenozoic plants and climates of the Arctic. North Atlantic Treaty Organization. Advanced Science Institutes. NATO ASI Series I, Vol.27. Edited by M.C. Boulter and H.C. Fisher, Berlin, Springer-Verlag, 1994, p.35-55, Refs. p.44-48.

Tectonics, Continental drift, Geochronology, Paleoclimatology, Global change, Marine atmospheres, Marine geology, Ocean currents, Atmospheric circulation

50-897

Cenozoic dinoflagellate palaeoecology elucidated, and used for marine-terrestrial biological correlation.

Hubbard, R.N.L.B., Boulter, M.C., Manum, S.B., Cenozoic plants and climates of the Arctic. North Atlantic Treaty Organization. Advanced Science Institutes. NATO ASI Series I, Vol.27. Edited by M.C. Boulter and H.C. Fisher, Berlin, Springer-Verlag, 1994, p.57-72, 31 refs.

Paleoecology, Paleoclimatology, Marine deposits, Bottom sediment, Marine biology, Palynology, Fossils, Geochronology, Global change

50-898

Late Eocene-Oligocene dinoflagellate provincialism in the North Atlantic Ocean.

Damassa, S.P., Williams, G.L., Cenozoic plants and climates of the Arctic. North Atlantic Treaty Organization. Advanced Science Institutes. NATO ASI Series I, Vol.27. Edited by M.C. Boulter and H.C. Fisher, Berlin, Springer-Verlag, 1994, p.73-92, 43 refs.

Paleoecology, Paleoclimatology, Marine biology, Marine deposits, Bottom sediment, Drill core analysis, Biogeography, Geochronology, Ocean currents, Global change

50-899

Dinoflagellate cysts and climate change through the Neogene.

Harland, R., Cenozoic plants and climates of the Arctic. North Atlantic Treaty Organization. Advanced Science Institutes. NATO ASI Series I, Vol.27. Edited by M.C. Boulter and H.C. Fisher, Berlin, Springer-Verlag, 1994, p.93-105, 55 refs.

Paleoecology, Paleoclimatology, Marine biology, Marine deposits, Bottom sediment, Plankton, Fossils, Geochronology, Global change

50-900

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Fot'ianova, L.I., Serova, M.IA., Cenozoic plants and climates of the Arctic. North Atlantic Treaty Organization. Advanced Science Institutes. NATO ASI Series I, Vol.27. Edited by M.C. Boulter and H.C. Fisher, Berlin, Springer-Verlag, 1994, p.107-114, 13 refs.

Paleoecology, Paleobotany, Paleoclimatology, Marine biology, Marine deposits, Fossils, Geochronology, Global change, Russia—Kamchatka Peninsula

50-901

Tertiary climate changes in the Far East based on palaeofloristic and palaeomagnetic data.

Krassilov, V.A., Cenozoic plants and climates of the Arctic. North Atlantic Treaty Organization. Advanced Science Institutes. NATO ASI Series I, Vol.27. Edited by M.C. Boulter and H.C. Fisher, Berlin, Springer-Verlag, 1994, p.115-126, 34 refs.

Paleobotany, Paleoecology, Paleoclimatology, Plant ecology, Vegetation patterns, Fossils, Remanent magnetism, Geochronology, Global change, Russia—Far East

50-902

Review of Late Cretaceous floras and climates of arctic Russia.

Herman, A.B., Cenozoic plants and climates of the Arctic. North Atlantic Treaty Organization. Advanced Science Institutes. NATO ASI Series I, Vol.27. Edited by M.C. Boulter and H.C. Fisher, Berlin, Springer-Verlag, 1994, p.127-149, 49 refs.

Paleobotany, Paleoecology, Paleoclimatology, Plant ecology, Vegetation patterns, Fossils, Stratigraphy, Geochronology, Global change, Russia—Siberia

50-903

Late Cretaceous arctic platanoids and high latitude climate.

Herman, A.B., Cenozoic plants and climates of the Arctic. North Atlantic Treaty Organization. Advanced Science Institutes. NATO ASI Series I, Vol.27. Edited by M.C. Boulter and H.C. Fisher, Berlin, Springer-Verlag, 1994, p.151-159, 15 refs.

Paleobotany, Paleoecology, Paleoclimatology, Plant ecology, Vegetation patterns, Global change

50-904

Circum-arctic plant fossils and the Cretaceous-Tertiary transition.

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Paleobotany, Paleoecology, Paleoclimatology, Plant ecology, Vegetation patterns, Fossils, Global change, Geochronology

50-905

Early Tertiary vegetation of arctic Canada and its relevance to paleoclimatic interpretation.

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Paleobotany, Paleoecology, Paleoclimatology, Plant ecology, Vegetation patterns, Forest ecosystems, Forest lines, Fossils, Global change, Canada—Northwest Territories—Ellesmere Island, Canada—Northwest Territories—Axel Heiberg Island

50-906

Two conifers—*Tetraclinis* Mast. (Cupressaceae) and *Metasequoia* Miki (Taxodiaceae)—relicts or palaeoclimatic indicators of the past.

Mai, D.H., Cenozoic plants and climates of the Arctic. North Atlantic Treaty Organization. Advanced Science Institutes. NATO ASI Series I, Vol.27. Edited by M.C. Boulter and H.C. Fisher, Berlin, Springer-Verlag, 1994, p.199-213, 44 refs.

Paleobotany, Paleoecology, Paleoclimatology, Plant ecology, Vegetation patterns, Trees (plants), Biogeography

50-907

Palaeogene flora of Spitsbergen: implications for arctotertiary climatostratigraphy.

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Paleobotany, Paleoecology, Paleoclimatology, Plant ecology, Vegetation patterns, Stratigraphy, Norway—Spitsbergen

50-908

Alaskan Palaeogene climates as inferred from the CLAMP database.

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Paleobotany, Paleoecology, Paleoclimatology, Plant ecology, Vegetation patterns, Biogeography, Statistical analysis, United States—Alaska

50-909

Invasion of arcto-tertiary elements in the Palaeogene of central Europe.

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Paleobotany, Paleoecology, Paleoclimatology, Plant ecology, Vegetation patterns, Introduced plants, Biogeography

50-910

Connecting links between the Arctic Palaeogene and European Tertiary floras.

Kvaček, Z., Cenozoic plants and climates of the Arctic. North Atlantic Treaty Organization. Advanced Science Institutes. NATO ASI Series I, Vol.27. Edited by M.C. Boulter and H.C. Fisher, Berlin, Springer-Verlag, 1994, p.251-266, Refs. p.263-266.

Paleobotany, Paleoecology, Paleoclimatology, Plant ecology, Vegetation patterns, Biogeography

50-911

Estimate of the early Tertiary paleoclimate of the southern Arctic.

Tiffney, B.H., Cenozoic plants and climates of the Arctic. North Atlantic Treaty Organization. Advanced Science Institutes. NATO ASI Series I, Vol.27. Edited by M.C. Boulter and H.C. Fisher, Berlin, Springer-Verlag, 1994, p.267-295, Refs. p.276-280.

Paleobotany, Paleoecology, Paleoclimatology, Plant ecology, Vegetation patterns, Biogeography, Statistical analysis

50-912

Fossil flora of the Paleogene climatic optimum in north eastern Asia.

Budantsev, L.IU., Cenozoic plants and climates of the Arctic. North Atlantic Treaty Organization. Advanced Science Institutes. NATO ASI Series I, Vol.27. Edited by M.C. Boulter and H.C. Fisher, Berlin, Springer-Verlag, 1994, p.297-313, 14 refs.

Paleobotany, Paleoecology, Paleoclimatology, Plant ecology, Vegetation patterns, Fossils, Biogeography, Global change

50-913

Some early Paleogene species from western Kamchatka.

Lavrenko, O.D., Fot'ianova, L.I., Cenozoic plants and climates of the Arctic. North Atlantic Treaty Organization. Advanced Science Institutes. NATO ASI Series I, Vol.27. Edited by M.C. Boulter and H.C. Fisher, Berlin, Springer-Verlag, 1994, p.315-325, 16 refs.

Paleobotany, Paleoecology, Paleoclimatology, Plant ecology, Vegetation patterns, Fossils, Russia—Kamchatka Peninsula

50-914

Migrations and evolution: computerised maps from computerised data.

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Paleobotany, Paleoecology, Paleoclimatology, Plant ecology, Vegetation patterns, Fossils, Biogeography, Computerized simulation

50-915

Floristic changes in the areas surrounding the Paratethys during Neogene time.

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Paleobotany, Paleoecology, Paleoclimatology, Plant ecology, Vegetation patterns, Fossils, Biogeography

50-916

Some late Pliocene and early Pleistocene pollen profiles from Poland.

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Paleobotany, Paleoecology, Paleoclimatology, Plant ecology, Vegetation patterns, Palynology, Fossils, Stratigraphy, Poland

50-917

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Paleobotany, Paleoecology, Paleoclimatology, Plant ecology, Vegetation patterns, Fossils

50-918

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Paleobotany, Paleoecology, Paleoclimatology, Plant ecology, Vegetation patterns, Fossils

50-919

Durability of concrete in cold climates.

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Concrete freezing, Concrete durability, Concrete admixtures, Air entrainment, Frost action, Frost resistance, Frost protection, Cold weather performance

50-920

Chlorophyll *a*, suspended organic carbon and silicon in the sea ice of Admiralty Bay. [Khlorofill "a", vzveshennyĭ organicheskiĭ uglerod i kremniĭ v morskom l'du zaliva Admiraliti (o-v King-Dzhordzh, zap. Antarktika)]

Mel'nikov, I.A., Pelagicheskie ekosistemy IUzhnogo okeana: sbornik nauchnykh trudov (Pelagic ecosystems of the southern ocean: collected scientific papers). Edited by N.M. Voronina, Moscow, Nauka, 1993, p.204, In Russian.

DLC QH84.2.P45

Sea ice, Ice composition, Suspended sediments, Antarctica—Admiralty Bay

Investigation of sea ice chemical composition carried out in Admiralty Bay from July 5, 1987 (ice thickness 18 cm) to Oct. 27, 1987 (ice thickness 72 cm) showed that the silicon quantitative dynamics differed sharply from the concentration dynamics of the organic components: at every stage of ice formation, the silicon concentration in the ice was lower than in the sea water.

50-921

Late Pleistocene morainal bank facies at Greystones, eastern Ireland: an example of sedimentation during ice marginal re-equilibration in an isostatically depressed basin.

McCabe, A.M., O'Cofaigh, C., *Sedimentology*, 1995, Vol.42, p.647-663, 34 refs.

Glaciation, Glacial geology, Glacial deposits, Moraines, Isostasy, Marine geology, Marine deposits, Quaternary deposits, Stratigraphy, Paleoclimatology, Ireland, Irish Sea

50-922

Development of slope valleys in the glacimarine environment of a complex subduction zone, northern Gulf of Alaska.

Carlson, P.R., Bruns, T.R., Fisher, M.A., Glacimarine environments: processes and sediments. Special publication No.53. Edited by J.A. Dowdeswell and J.D. Scourse, London, Geological Society, 1990, p.139-153, 31 refs. For other papers from same source see 45-2778 through 45-2786.

DLC GC380.15.G59 1990

Glaciation, Glacial deposits, Marine deposits, Marine geology, Ocean bottom, Bottom topography, Bottom sediment, Quaternary deposits, Pleistocene, Tectonics, Continental drift, United States—Alaska—Alaska, Gulf

50-923

Fossilization potential of arctic fjord and continental shelf benthic macrofaunas.

Aitken, A.E., Glacimarine environments: processes and sediments. Special publication No.53. Edited by J.A. Dowdeswell and J.D. Scourse, London, Geological Society, 1990, p.155-176, 70 refs. For other papers from same source see 45-2778 through 45-2786.

DLC GC380.15.G59 1990

Marine geology, Marine deposits, Glacial deposits, Bottom sediment, Quaternary deposits, Marine biology, Paleoecology, Fossils, Geochronology, Canada—Northwest Territories—Baffin Island

50-924

Flux and preservation of organic carbon in Baffin Island fjords.

Syvitski, J.P.M., LeBlanc, K.W.G., Cranston, R.E., Glacimarine environments: processes and sediments. Special publication No.53. Edited by J.A. Dowdeswell and J.D. Scourse, London, Geological Society, 1990, p.177-199, 58 refs. For other papers from same source see 45-2778 through 45-2786.

DLC GC380.15.G59 1990

Marine deposits, Glacial deposits, Bottom sediment, Suspended sediments, Alluvium, Outwash, Nutrient cycle, Geochemical cycles, Canada—Northwest Territories—Baffin Island

50-925

Carbonate minerals in glacial sediments: geochemical clues to palaeoenvironment.

Fairchild, I.J., Spiro, B., Glacimarine environments: processes and sediments. Special publication No.53. Edited by J.A. Dowdeswell and J.D. Scourse, London, Geological Society, 1990, p.201-216, 68 refs. For other papers from same source see 45-2778 through 45-2786.

DLC GC380.15.G59 1990

Glacial deposits, Quaternary deposits, Glacial lakes, Lacustrine deposits, Geochemistry, Paleoecology, Paleoclimatology

50-926

Nordic seas surface ice drift reconstructions: evidence from ice rafted coal fragments during oxygen isotope stage 6.

Bischof, J., Koch, J., Kubisch, M., Spielhagen, R.F., Thiede, J., Glacimarine environments: processes and sediments. Special publication No.53. Edited by J.A. Dowdeswell and J.D. Scourse, London, Geological Society, 1990, p.235-251, 63 refs. For other papers from same source see 45-2778 through 45-2786.

DLC GC380.15.G59 1990

Marine geology, Marine deposits, Quaternary deposits, Ocean bottom, Bottom sediment, Ice rafting, Drift, Ocean currents, Pleistocene, Drill core analysis, Geochronology

50-927

Glacial geomorphic features in the northern Barents Sea: direct evidence for grounded ice and implications for the pattern of deglaciation and late glacial sedimentation.

Solheim, A., Russwurm, L., Elverhøi, A., Berg, M.N., Glacimarine environments: processes and sediments. Special publication No.53. Edited by J.A. Dowdeswell and J.D. Scourse, London, Geological Society, 1990, p.253-268, 54 refs. For other papers from same source see 45-2778 through 45-2786.

DLC GC380.15.G59 1990

Glaciation, Glacial geology, Glacial deposits, Marine geology, Ocean bottom, Bottom topography, Bottom sediment, Grounded ice, Ice scoring, Paleoclimatology, Geochronology, Barents Sea

50-928

Geometry and genesis of the glacigenic sediments in the southern Barents Sea.

Vorren, T.O., Lebesbye, E., Larsen, K.B., Glacimarine environments: processes and sediments. Special publication No.53. Edited by J.A. Dowdeswell and J.D. Scourse, London, Geological Society, 1990, p.269-288, 39 refs. For other papers from same source see 45-2778 through 45-2786.

DLC GC380.15.G59 1990

Glaciation, Glacial geology, Glacial deposits, Marine geology, Ocean bottom, Bottom topography, Bottom sediment, Geochronology, Paleoclimatology, Barents Sea

50-929

Early Holocene morainal bank sedimentology and marine ecology, Skjoldungebrae gorge, North Scoresby Land, East Greenland.

Huddart, D., Peacock, J.D., Glacimarine environments: processes and sediments. Special publication No.53. Edited by J.A. Dowdeswell and J.D. Scourse, London, Geological Society, 1990, p.289-305, 55 refs. For other papers from same source see 45-2778 through 45-2786.

DLC GC380.15.G59 1990

Glaciation, Glacial geology, Glacial deposits, Moraines, Glacial till, Marine geology, Marine deposits, Quaternary deposits, Coastal topographic features, Shore erosion, Geochronology, Paleoclimatology, Greenland

50-930

Proximal and distal glacimarine deposits in southwestern Sweden: contrasts in sedimentation.

Stevens, R.L., Glacimarine environments: processes and sediments. Special publication No.53. Edited by J.A. Dowdeswell and J.D. Scourse, London, Geological Society, 1990, p.307-316, 33 refs. For other papers from same source see 45-2778 through 45-2786.

DLC GC380.15.G59 1990

Glaciation, Glacial geology, Glacial deposits, Meltwater, Suspended sediments, Outwash, Marine geology, Marine deposits, Quaternary deposits, Stratigraphy, Geochronology, Paleoclimatology, Sweden

50-931

Pleistocene-Holocene transition in southwestern Sweden and the recognition of deglaciation effects in adjacent seas.

Lord, A.R., Glacimarine environments: processes and sediments. Special publication No.53. Edited by J.A. Dowdeswell and J.D. Scourse, London, Geological Society, 1990, p.317-328, 41 refs. For other papers from same source see 45-2778 through 45-2786.

DLC GC380.15.G59 1990

Glaciation, Glacial geology, Glacial deposits, Moraines, Marine geology, Marine deposits, Glacial lakes, Lacustrine deposits, Quaternary deposits, Geochronology, Sweden

50-932

Sedimentology and micropalaeontology of glacimarine sediments from the central and southwestern Celtic Sea.

Scourse, J.D., et al, Glacimarine environments: processes and sediments. Special publication No.53. Edited by J.A. Dowdeswell and J.D. Scourse, London, Geological Society, 1990, p.329-347, 55 refs. For other papers from same source see 45-2778 through 45-2786.

DLC GC380.15.G59 1990

Glaciation, Glacial geology, Glacial deposits, Marine geology, Marine deposits, Ocean bottom, Bottom sediment, Quaternary deposits, Paleoecology, Paleoclimatology, Geochronology, Celtic Sea

50-933

Glacially-influenced sedimentation on the Hebridean slope, northwestern United Kingdom continental margin.

Stoker, M.S., Glacimarine environments: processes and sediments. Special publication No.53. Edited by J.A. Dowdeswell and J.D. Scourse, London, Geological Society, 1990, p.349-362, 55 refs. For other papers from same source see 45-2778 through 45-2786.

DLC GC380.15.G59 1990

Glaciation, Glacial geology, Glacial deposits, Marine geology, Marine deposits, Ocean bottom, Bottom topography, Bottom sediment, Pleistocene, Geochronology, Paleoclimatology, United Kingdom—Outer Hebrides

50-934

Sedimentation patterns and facies geometries on a temperate glacially-influenced continental shelf: the Yakataga Formation, Middleton Island, Alaska.

Eyles, C.H., Lagoe, M.B., Glacimarine environments: processes and sediments. Special publication No.53. Edited by J.A. Dowdeswell and J.D. Scourse, London, Geological Society, 1990, p.363-386, 100 refs. For other papers from same source see 45-2778 through 45-2786.

DLC GC380.15.G59 1990

Glaciation, Glacial geology, Glacial deposits, Marine geology, Marine deposits, Ocean bottom, Bottom sediment, Geologic structures, Stratigraphy, Geochronology, Paleoclimatology, United States—Alaska—Middleton Island, United States—Alaska—Alaska, Gulf

50-935

Marginal-marine glacial sedimentation in the late Precambrian succession of East Greenland.

Moncrieff, A.C.M., Hambrey, M.J., Glacimarine environments: processes and sediments. Special publication No.53. Edited by J.A. Dowdeswell and J.D. Scourse, London, Geological Society, 1990, p.387-410, 47 refs. For other papers from same source see 45-2778 through 45-2786.

DLC GC380.15.G59 1990

Glaciation, Glacial geology, Glacial deposits, Glacial till, Marine geology, Marine deposits, Bottom sediment, Coastal topographic features, Stratigraphy, Geochronology, Paleoclimatology, Greenland

50-936

Ozone hole reemerges above the Antarctic.

Monastersky, R., *Science news*, Oct. 14, 1995, 148(16), p.245-246.

Ozone, Antarctica—Amundsen-Scott Station

It is briefly reported that the ozone hole has once again eaten its way across the antarctic sky, reaching near-record proportions. Some findings on ozone loss this year by researchers from the University of Wyoming are cited.

50-937

Similarity of vibrational spectra of high-density amorphous ice and high-pressure phase ice VI.

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Ice physics, High pressure ice, Amorphous ice, Molecular structure, Neutron scattering, Spectra, Vibration, Molecular energy levels

50-938

Intercomparisons of sea ice concentration from SSM/I and AVHRR data of the Ross Sea.

Zibordi, G., Van Woert, M.L., Meloni, G.P., Canossi, I., *Remote sensing of environment*, Sep. 1995, 53(3), p.145-152, 23 refs.

Sea ice distribution, Ice surveys, Classifications, Reflectivity, Sensor mapping, Spaceborne photography, Radiometry, Microwaves, Accuracy, Statistical analysis, Antarctica—Ross Sea

Special Sensor Microwave Imager (SSM/I) and Advanced Very High Resolution Radiometer (AVHRR) sea ice mapping capabilities are analyzed using antarctic data acquired during Nov. 1990 over the Ross Sea. Quantitative comparisons between sea ice concentrations obtained from SSM/I and AVHRR data show differences of -10% to +50% with average differences between 9% and 17%. These differences are mainly attributed to: a) sea ice reflectance and emissivity spatial variations occurring during the melting season, which reduce the accuracy of concentrations obtained with global tie points, and b) colocation inaccuracy between SSM/I and AVHRR grids. (Auth. mod.)

50-939

Recent foraminifera in glaciomarine sediments from three arctic fjords of Novaia Zemlia and Svalbard.

Korsun, S.A., Pogodina, I.A., Forman, S.L., Lubinski, D.J., *Polar research*, June 1995, 14(1), p.15-31, 44 refs.

Marine deposits, Marine biology, Glacial deposits, Estuaries, Biomass, Bottom sediment, Sampling, Ecology, Classifications, Norway—Svalbard, Russia—Novaya Zemlya, Barents Sea

50-940

Depositional environment of the Laptev Sea continental margin: preliminary results from the R/V *Polarstern* ARK IX-4 cruise.

Nürnberg, D., et al, *Polar research*, June 1995, 14(1), p.43-53, 27 refs.

Oceanographic surveys, Marine geology, Marine deposits, Radio echo soundings, Sedimentation, Bottom sediment, Stratigraphy, Arctic Ocean

50-941

Variability in nutrient concentrations around Elephant Island, Antarctica, during 1991-1993.

Silva S., N., Helbling, E.W., Villafañe, V.E., Amos, A.F., Holm-Hansen, O., *Polar research*, June 1995, 14(1), p.69-82, 54 refs.

Marine biology, Oceanography, Sampling, Plankton, Biomass, Seasonal variations, Water chemistry, Nutrient cycle, Ecology, Antarctica—Elephant Island

The nutrient status of the various water mass structures within a large sampling grid around Elephant I. are reported and the nutrient concentrations relative to data from the physical and biological components of the Antarctic Marine Living Resources Programme are discussed. Samples were taken from eleven depths at 17 stations in 1991, at four depths at 144 stations in 1992 and 182 stations in 1993. There was considerable variability in the concentrations of all three nutrients within the study area, but silicic acid showed the greatest variance among the water masses present in the sampling grid. The ratios of the nutrient deficits (difference in winter and summer values) in the upper 100 m differed considerably in Drake Passage waters as compared to Bransfield Strait waters, with both nitrate and silicic acid showing the greatest variance. Nutrient deficits did not increase from Jan. to Feb., indicating that rates of replenishment of nutrients to the euphotic zone by physical processes and/or biological regeneration were approximately equal to the rate of uptake and assimilation by phytoplankton during that time period. (Auth. mod.)

50-942

Merging U.S., Canadian arctic areas considered.
Oil & gas journal, Aug. 29, 1994, 92(35), p.35.

Ecosystems, Ecology, Environmental protection, Legislation, Petroleum industry, Oil wells, International cooperation, United States—Alaska

50-943

Thermodynamic theory of supercooled liquids.
Kivelson, D., Kivelson, S.A., Zhao, X.L., Nussinov, Z., Tarjus, G., *Physica A,* Sep. 15, 1995, 219(1-2), p.27-38, 26 refs.

Liquid cooling, Solutions, Supercooling, Theories, Thermodynamic properties, Viscosity, Phase transformations, Temperature effects

50-944

Holding-time estimates for soils containing explosives residues: comparison of fortification vs. field contamination.
Grant, C.L., Jenkins, T.F., Myers, K.F., McCormick, E.F., MP 3700, *Environmental toxicology and chemistry,* 1995, 14(11), p.1865-1874, 32 refs.

Soil pollution, Soil chemistry, Soil tests, Chemical analysis, Explosives

Maximum acceptable preextraction analytical holding times (MHTs) were estimated by spiking aqueous solutions of two nitramines, octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX) and hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX) and three nitroaromatics, 1,3,5-trinitrobenzene (TNB), 2,4,6-trinitrotoluene (TNT), and 2,4-dinitrotoluene (2,4-DNT), into three soils. Nitramines were stable over an 8-week test period at all storage temperatures, but nitroaromatics, which were reasonably stable when frozen, degraded rapidly at room temperature and more slowly under refrigeration. In contrast, both nitroaromatics and nitramines were quite stable under refrigeration for four field-contaminated soils. When three of these field-contaminated soils were subsequently fortified with TNT and TNB, rapid degradation under refrigeration was again observed for the added nitroaromatics. The rates of degradation were quite different in the three soils, further emphasizing the uncertainties in MHT estimates derived from fortified soils. The authors conclude that fortified soils can produce very different estimates of MHTs, recoveries, treatability, etc., compared to field-contaminated soils even when spiking is done in aqueous media.

50-945

Advective-diffusive heat transfer in snow.
Albert, M.R., MP 3701, New York, American Society of Mechanical Engineers, 1995, 4p., Presented at the ASME International Mechanical Engineering Congress and Exposition, San Francisco, Nov. 12-17, 1995. 7 refs.

Snow thermal properties, Snow heat flux, Snow permeability, Snow air interface, Air flow, Advection, Convection, Thermal diffusion, Heat transfer

In controlled laboratory settings it is possible to identify, isolate, and explain various heat transfer phenomena. In field experiments associated with natural phenomena, however, it is often difficult to isolate the effects from other confounding natural events. Such is the case with the movement of air through a natural snowpack. In the literature there have been reports of snow and firn temperature measurements that cannot be predicted by heat conduction models. Advective heat transfer due to air flow within the snow is indicated, and the existence of ventilation (windpumping) is currently being debated in the literature. One step toward the goal of identifying natural advective effects involves observing effects that are induced in the snow cover when a known forcing for the air flow is applied. In addition, a model that is able to reproduce measured, controlled forced convection will provide a good foundation for modeling natural ventilation. In this paper a numerical model is employed to examine advective-diffusive (Peclet number) effects on multidimensional ventilation of a naturally occurring snowpack. The model is verified by comparing calculated results with a field experiment where air was forced through a natural snowpack. It is found that air flow through the pack was sufficient to produce advection-dominated heat transfer throughout most of the pack.

50-946

Large-scale landslide simulations: global deformation, velocities and basal friction.
Campbell, C.S., Cleary, P.W., Hopkins, M.A., MP 3702, *Journal of geophysical research,* May 10, 1995, 100(B5), p.8267-8283, 34 refs.

Landslides, Avalanche mechanics, Avalanche tracks, Avalanche modeling

The cause of the apparent small friction exhibited by long runout landslides has long been speculated upon. In an attempt to provide some insight into the matter, this paper describes results obtained from a discrete particle computer simulation of landslides composed of up to 1,000,000 two-dimensional discs. While simplified, the results show many of the characteristics of field data (the volumetric effect on runout, preserved strata, etc.) and with allowances made for the two-dimensional nature of the simulation, the runouts compare well with those of actual landslides. The results challenge the current view that landslides travel as a nearly solid block riding atop a low friction basal layer. Instead, they show that the mass is completely shearing and indicate that the apparent friction coefficient is an increasing function of shear rate. The volumetric effect can then be understood. With all other conditions being equal, different size slides appear to travel with nearly the same average velocity; however, as the larger landslides are thicker, they experience smaller shear rates and correspondingly smaller frictional resistance.

50-947

Two-dimensional dynamic simulation of solid fracture. Part I: description of the model.
Potapov, A.V., Hopkins, M.A., Campbell, C.S., MP 3703, *International journal of modern physics C,* 1995, 6(3), p.371-398, 18 refs.

Fracturing, Crack propagation, Elastic properties, Plastic deformation, Computerized simulation, Mathematical models

This paper describes a two-dimensional computer simulation of solid fracture that allows the body and the fragments to be followed well beyond the point of simple crack formation. The model is based on discrete particle computer simulations used for studying granular flows. Here, macroscopic polygonal solids are constructed by "gluing" together small elements. Depending on the stress conditions, the glued bonds between the elements can respond elastically, undergo plastic failure or break, allowing cracks to propagate across the macroscopic particle along the boundaries between their microscopic constituents. In essence, this process creates a simulated material upon which breakage occurs. Several element shapes have been studied.

50-948

Guide to environmental impact assessment of activities in Antarctica.
London. Foreign and Commonwealth Office. South Atlantic and Antarctic Department. Polar Regions Section, London, 1995, 11p., 6 refs.

Environmental impact, Environmental protection, Legislation, International cooperation, Antarctica

50-949

Bituminous pavements: building a bridge between theory and reality. [Bituminösa beläggningar: att bygga broar mellan teori och verklighet]
Said, S.F., *Sweden. Väg- och transportforskningsinstitut. (Road and Transport Research Institute). VTI särtryck (reprint),* 1995, No.248, 9p., In Swedish. 12 refs. Presented at a meeting on asphalt pavements held in Färöarna, June 18-21, 1995.

Road maintenance, Bituminous concretes, Pavements, Cold weather tests

50-950

Cold recycling of reclaimed asphalt concrete. Test road in Värmland—three years experience. [Kall återvinning av asfaltbeläggning. Provvägsförsök i Värmland—tre års erfarenheter]
Jacobson, T., *Sweden. Väg- och transportforskningsinstitut. (Road and Transport Research Institute). VTI meddelande,* 1995, No.764, 63p. + appends., In Swedish with English summary. 13 refs.

Road maintenance, Bituminous concretes, Pavements, Freeze thaw tests, Cold weather performance, Waste disposal, Sweden

50-951

Development of methods for assessing the frost resistance of clay bricks.
Silvennoinen, K., Koskinen, P., Pyy, H., Piepponen, S., *Finland. Technical Research Centre (Valtion teknillinen tutkimuskeskus). VTT research notes,* 1995, No.1624, 48p. + appends., 17 refs.

Bricks, Clays, Construction materials, Frost resistance, Freeze thaw tests, Cold weather performance

50-952

Unsurfaced road maintenance management.
Eaton, R.E., Beacham, R.E., MP 3704, Technical manual TM 5-626, Washington, D.C., U.S. Department of the Army, Jan. 1995, Var. p., 16 refs. For another version see 47-2756.

Road maintenance, Earthwork, Military facilities, Manuals

50-953

Witness the Arctic.
Arctic Research Consortium of the United States, Fairbanks, 1995, 8p.

Research projects, Organizations, United States—Alaska

50-954

Witness the Arctic, Vol.3, no.2.
Arctic Research Consortium of the United States, Fairbanks, 1995, 16p.

Research projects, International cooperation, United States—Alaska

50-955

U.S. arctic policy aims for circumpolar cooperation.
Senseney, R., *Witness the Arctic,* 1995, 3(2), p.1-2.

Research projects, International cooperation, Ecosystems, Organizations, Environmental protection

50-956

Seed germination and seedling growth of *Carex doenitzii* growing on alpine zone of Mt. Fuji.
Kibe, T., Masuzawa, T., *Journal of plant research,* Mar. 1994, 107(1085), p.23-27, 23 refs.

Alpine landscapes, Plant ecology, Phenology, Forest lines, Growth, Cold weather tests, Temperature effects, Japan—Fuji, Mount

50-957

Solar radiation absorption in the atmosphere due to water and ice clouds: sensitivity experiments with plane-parallel clouds.
Gautier, C., Elements of change 1994. Climate-radiation feedbacks: the current state of the science. Edited by S.J. Hassol et al, Washington, D.C., U.S. Department of Energy. Environmental Sciences Division, 1995, p.36-39, DOE/ER-0661T, 4 refs.

Cloud physics, Climatology, Global change, Cloud cover, Optical properties, Ice crystal optics, Solar radiation, Radiation absorption, Radiation balance, Models

50-958

Climatic implications of ice microphysics.
Liou, K.N., Elements of change 1994. Climate-radiation feedbacks: the current state of the science. Edited by S.J. Hassol et al, Washington, D.C., U.S. Department of Energy. Environmental Sciences Division, 1995, p.54-57, DOE/ER-0661T.

Climatology, Global change, Cloud physics, Radiation balance, Optical properties, Ice crystal size, Ice crystal optics, Albedo, Temperature effects

50-959

Parameterization of clouds and radiation in climate models.
Roeckner, E., Elements of change 1994. Climate-radiation feedbacks: the current state of the science. Edited by S.J. Hassol et al, Washington, D.C., U.S. Department of Energy. Environmental Sciences Division, 1995, p.68-71, DOE/ER-0661T.

Climatology, Radiation balance, Cloud cover, Cloud physics, Optical properties, Ice crystal optics, Simulation

50-960
Parameterization of cirrus optical depth and cloud fraction.
Soden, B., Elements of change 1994. Climate-radiation feedbacks: the current state of the science. Edited by S.J. Hassol et al, Washington, D.C., U.S. Department of Energy. Environmental Sciences Division, 1995, p.86-89, DOE/ER-0661T, 1 ref.
Climatology, Cloud cover, Remote sensing, Cloud physics, Optical properties, Ice crystal optics, Models

50-961
Simulation of foam protection of plants against frost.
Krasovitski, B., Kimmel, E., Amir, I., *Journal of agricultural engineering research,* July 1995, 61(3), p.155-163, 21 refs.
Plants (botany), Radiant cooling, Cold weather survival, Frost protection, Materials, Soil temperature, Temperature control, Protective coatings, Insulation, Heat flux, Mathematical models

50-962
Vehicle tracks on high arctic tundra: their effects on the soil, vegetation, and soil arthropods.
Kevan, P.G., Forbes, B.C., Kevan, S.M., Behan-Pelletier, V., *Journal of applied ecology,* Aug. 1995, 32(3), p.655-667, 39 refs.
Tundra terrain, Tundra soils, Tundra vegetation, Vegetation patterns, Thermokarst development, Ecology, Active layer, Tracked vehicles, Damage, Revegetation, Environmental impact, Soil tests

50-963
Late Pleistocene soil formation on coastal lowlands of northern Yakutia.
Gubin, S.V., *Eurasian soil science,* May 1995, 27(5), p.19-32, Translated from Pochvovedenie. 23 refs.
Pleistocene, Quaternary deposits, Soil formation, Stratigraphy, Cryogenic structures, Paleoecology, Loess, Ground ice, Russia—Yakutia

50-964
Last glaciation in central Magellan Strait, southernmost Chile.
Clapperton, C.M., Sugden, D.E., Kaufman, D.S., McCulloch, R.D., *Quaternary research,* Sep. 1995, 44(2), p.133-148, 27 refs.
Pleistocene, Marine geology, Glacier oscillation, Glaciation, Landforms, Quaternary deposits, Glacial deposits, Marine deposits, Radioactive age determination, Geochronology, Chile—Magellan Strait

50-965
Ice-volume forcing of East Asian winter monsoon variations in the past 800,000 years.
Ding, Z.L., Liu, T.S., Rutter, N.W., Yu, Z.W., Guo, Z.T., Zhu, R.X., *Quaternary research,* Sep. 1995, 44(2), p.149-159, 57 refs.
Paleoclimatology, Climatic changes, Ice sheets, Ice volume, Atmospheric circulation, Wind direction, Quaternary deposits, Loess, Soil analysis, Grain size, Ice cover effect, Ice air interface, Periodic variations

50-966
Modern and Holocene pollen assemblages from some small arctic lakes on Somerset Island, NWT, Canada.
Gajewski, K., *Quaternary research,* Sep. 1995, 44(2), p.228-236, 33 refs.
Paleoclimatology, Climatic changes, Paleoecology, Vegetation patterns, Quaternary deposits, Lacustrine deposits, Palynology, Sampling, Statistical analysis, Correlation, Canada—Northwest Territories—Somerset Island

50-967
Estimating snowmelt runoff erosion indices for Canada.
Hayhoe, H.N., Pelletier, R.G., Coote, D.R., *Journal of soil and water conservation,* Mar.-Apr. 1995, 50(2), p.174-179, 20 refs.
Precipitation (meteorology), Soil erosion, Snow hydrology, Runoff forecasting, Snowmelt, Rain, Correlation, Snow cover effect, Computerized simulation, Indexes (ratios), Canada

50-968
Tropical toxins ruin arctic catch.
Pearce, F., *New scientist,* July 22, 1995, 147(1987), p.7.
Limnology, Ecology, Water pollution, Air pollution, Aerosols, Environmental impact, Soil air interface

50-969
Avalanche climatology of the continental zone in the southern Rocky Mountains.
Mock, C.J., *Physical geography,* May-June 1995, 16(3), p.165-187, 53 refs.
Climatology, Atmospheric circulation, Avalanches, Avalanche forecasting, Distribution, Seasonal variations, Statistical analysis, Correlation, Wind factors, United States—Rocky Mountains

50-970
Temporal characteristics of Pennsylvania snowfall, 1950-1951 through 1989-1990.
Acker, J.C., Soulé, P.T., *Physical geography,* May-June 1995, 16(3), p.188-204, 40 refs.
Snowfall, Snow accumulation, Seasonal variations, Climatic factors, Climatic changes, Statistical analysis, Correlation, United States—Pennsylvania

50-971
Wetlands and ground water in the United States.
Stone, A.W., Stone, A.J.L., Dublin, American Ground Water Trust, 1994, 100p. Pertinent p.72-82, Refs. p.79-82.
DLC GB624.S76
Hydrology, Ground water, Ecosystems, Wetlands, Seepage, Water transport, Tundra terrain, Permafrost hydrology, Terminology

50-972
Temporal variation in antarctic sea-ice: analysis of a long term fast-ice record from the South Orkney Islands.
Murphy, E.J., Clarke, A., Symon, C.J., Priddle, J., *Deep-sea research, Part I,* July 1995, 42(7), p.1045-1062, 52 refs.
Sea ice distribution, Ecology, Marine biology, Antarctica—South Orkney Islands, Antarctica—Signy Island, Antarctica—Weddell Sea
This paper uses a range of datasets to investigate the interannual variability in southern ocean sea-ice dynamics. The combined series covers the period from 1903 to the present. The analyses indicate that there has been a long term decline in the duration of sea-ice at the South Orkney Is. in the northwest Weddell Sea. This change has not been a simple linear decline but appears to have been the result of a reduction in the duration of fast-ice during the 1940s and 1950s. There was a pronounced sub-decadal year cycle in fast-ice duration at the South Orkney Is. from the mid-1960s to 1990. In recent years this cyclicity has broken down and fast-ice duration has been greater than expected. Analyses of satellite data have shown that fast-ice duration at Signy I. reflects the larger-scale ice dynamics of the Weddell Sea. Investigation of the Weddell Sea ice dynamics in relation to circumpolar ice extents indicates that the position of anomalies in the maximum sea-ice extent field precesses around the antarctic continent with a period of approximately 7-9 years. (Auth. mod.)

50-973
Giant facets at ice grain boundary grooves.
Wilen, W.A., Dash, J.G., *Science,* Nov. 17, 1995, 270(5239), p.1184-1186, 20 refs.
Boundary value problems, Ice physics, Ice temperature, Ice water interface, Nucleation

50-974
Concentration variations of atmospheric CO_2 over Syowa Station, Antarctica and their interpretation.
Murayama, S., et al, *Tellus,* Sep. 1995, 47B(4), p.375-390, 42 refs.
Atmospheric composition, Carbon dioxide, Atmospheric circulation, Seasonal variations, Antarctica—Showa Station
Aircraft and ground-based measurements of the atmospheric CO_2 concentration have been made at Showa Station since Jan. 1983. The minimum concentration of the average seasonal CO_2 cycle occurs in March throughout the troposphere, while the maximum concentration appears in mid-August in the upper troposphere and in late September in the lower and middle troposphere. The peak-to-peak amplitude of the cycle decreases slightly with height. The CO_2 concentration increases with height during most of the year, but from late winter to spring this height dependency is minimal. To examine the contribution of the atmospheric transport processes to these variations in CO_2 concentration, a 3-dimensional trajectory analysis was performed using data from the U.S. National Meteorological Center. From the results obtained, it is postulated that northern hemispheric air with relatively high CO_2 concentration is transported to the antarctic region through the upper troposphere from late fall to winter, while air with low CO_2 concentration is transported from the Southern Hemisphere middle latitudes into the antarctic region through the lower troposphere in the remaining seasons. (Auth.)

50-975
Processes affecting the CO_2 concentrations measured in Greenland ice.
Anklin, M., Barnola, J.M., Schwander, J., Stauffer, B., Raynaud, D., *Tellus,* Sep. 1995, 47B(4), p.461-470, 42 refs.
Ice cores, Carbon dioxide, Chemical analysis, Bubbling, Ice composition, Atmospheric composition
Detailed CO_2 measurements on ice cores from Greenland and Antarctica show different mean CO_2 concentrations for samples at the same gas age. The deviation between antarctic and Greenland CO_2 records increased by up to 20 ppmv during the last millennium. This work suggests that *in situ* production of CO_2 in Greenland ice could build up excess CO_2 after pore close off. Possible chemical reactions are the oxidation of organic carbon and the reaction between acidity and carbonate. It is concluded that the carbonate-acidity reaction is the most probable process to explain the excess CO_2 in the bubbles. The reaction could take place in very small liquid-like veins in cold ice, where the mobility of impurities is higher than in the ice lattice. At present, there exists no technique to measure the carbonate concentration in the ice directly. However, a comparison of CO_2 analyses performed with a dry- and a wet-extraction technique is sufficient to estimate the carbonate content of the ice. This estimate indicates a carbonate concentration in Greenland ice of about 0.4 ± 0.2 µmol/l and a much lower concentration in antarctic ice. (Auth. mod.)

50-976
Arctic oceanography; the path of North Atlantic Deep Water. Regional oceanography: an introduction; by M. Tomczak and J.S. Godfrey, Oxford, UK, Elsevier, Ltd., 1994, p.89-111 + 2 color images, Refs. p.397-409.
Oceanography, Ocean currents, Bottom topography, Wind direction, Precipitation (meteorology), Sea ice, Icebergs, Hydrology

50-977
Refractive-index measurements of natural air-hydrate crystals in an antarctic ice sheet.
Uchida, T., Shimada, W., Hondoh, T., Mae, S., Barkov, N.I., *Applied optics,* Sep. 1, 1995, 34(25), p.5746-5749, 12 refs.
Ice sheets, Ice physics, Ice cores, Ice crystal optics, Bubbles, Hydrates, Latticed structures, Refractivity, Sampling, Ice air interface, Imaging
The refractive index of air-hydrate crystals found in a deep antarctic ice sheet was measured using a Mach-Zehnder interferometer. A small difference between the refractive indices of the air-hydrate crystals and the matrix ice crystal was measured by the fringe-shift method. It was found that the refractive indices of all air-hydrate crystals were larger than those of ice, and the average difference was 5.3×10^{-3}, even considering the refractive-index anisotropy of ice crystals. Because the refractive indices depend on the occupancy ratio of cagelike cavities by air molecules, the experimental results were compared with the calculated values using the Onsager cavity model. The present method is useful for estimation of the cavity occupancy ratio of air-hydrate crystals and also of the amount of air molecules in polar ice cores. (Auth. mod.)

50-978
Distribution of deuterium excess in surface snow of the antarctic ice sheet.
Ren, J.W., Qin, D.H., *Chinese science bulletin,* Oct. 1995, 40(19), p.1628-1633, 8 refs.
Ice sheets, Paleoclimatology, Precipitation (meteorology), Snow composition, Sampling, Isotope analysis, Correlation
Analysis of stable isotope ratios for $\delta^{18}O$ and δD in snow and ice in cold regions has long been one of the most important tools for reconstructing paleoclimatic history. Recently, attention has been paid to the deuterium excess, which has also been recognized as a source of information about the vapor source regions. Distribution of deuterium excess in East Antarctica has been studied, but the data are mainly from some sites near the coast. In this note, the measurement result of stable isotope ratios in snow samples collected along the route of the 1990 International Trans-Antarctic Expedition is used to reveal the distribution of deuterium excess in surface snow over the antarctic ice sheet, and its significance is tentatively interpreted. (Auth. mod.)

50-979
Iron(II) in rainwater, snow, and surface seawater from a coastal environment.
Zhuang, G.S., Yi, Z., Wallace, G.T., *Marine chemistry,* Aug. 1995, 50(1-4), p.41-50, 27 refs.
Precipitation (meteorology), Oceanography, Aerosols, Solubility, Nutrient cycle, Geochemistry, Sea water, Sampling, Chemical analysis, Snow impurities, Environmental impact, United States—Massachusetts

50-980

Growth of the Greenland ice sheet: a performance assessment of altimeter retracking algorithms.

Davis, C.H., *IEEE transactions on geoscience and remote sensing,* Sep. 1995, 33(5), p.1108-1116, 31 refs.

Ice sheets, Ice growth, Ice surveys, Remote sensing, Spacecraft, Radar echoes, Height finding, Accuracy, Data processing, Correlation, Greenland

50-981

SAR interferometric signatures of forest.

Wegmüller, U., Werner, C.L., *IEEE transactions on geoscience and remote sensing,* Sep. 1995, 33(5), p.1153-1161, 25 refs.

Forest ecosystems, Vegetation patterns, Classifications, Sensor mapping, Spaceborne photography, Synthetic aperture radar, Backscattering, Frozen ground, Detection

50-982

Determination of volume and surface scattering from saline ice using ice sheets with precisely controlled roughness parameters.

Bredow, J.W., et al. MP 3705, *IEEE transactions on geoscience and remote sensing,* Sep. 1995, 33(5), p.1214-1221, 5 refs.

Sea ice, Remote sensing, Young ice, Surface roughness, Albedo, Wave propagation, Backscattering, Radar echoes, Topographic effects, Simulation

Experiments were performed at the U.S. Army Cold Regions Research and Engineering Laboratory (CRREL) to precisely determine the relative contributions of surface and volume scattering from saline ice that has well-known surface roughness characteristics. The ice growth phase of the experiment made use of two 6-ft diameter tanks and a 6-ft diameter mold with known roughness statistical parameters of rms height=0.25 cm and Gaussian correlation (correlation length=2.0 cm). One tank was used for growing a moderately thick saline ice sheet with very smooth surface, and the other was used for growing a thin layer of freshwater ice over the surface. The latter resulted in a layer with one statistically known rough boundary and one smooth boundary. Wide-bandwidth, multiple incidence angle backscattering measurements were performed, first on the bare saline ice sheet and then on the same sheet after the thin freshwater ice sheet was placed on top of it. Results indicate that the surface scattering dominates over saline ice volume scattering at all frequencies for low incidence angles for both the very smooth and Gaussian rough surfaces. The significance of volume scattering depends strongly on angle of incidence, frequency, volume scattering albedo, surface roughness, and surface correlation function. (Auth.)

50-983

Sea-ice velocity fields estimation on Ross Sea with NOAA-AVHRR.

Moctezuma Flores, M., Maitre, H., Parmiggiani, F., *IEEE transactions on geoscience and remote sensing,* Sep. 1995, 33(5), p.1286-1289, 13 refs.

Sea ice distribution, Ice detection, Velocity measurement, Pack ice, Drift, Radiometry, Spaceborne photography, Ice forecasting, Radiance, Image processing, Antarctica—Ross Sea

A complete methodology is proposed for automatic tracking of sea-ice in daylight AVHRR (Advanced Very High Resolution Radiometer) data. Two aspects are outlined: the use of partially cloudy monocular images and the estimation of ice pack trajectories along an image sequence. First, a classification technique is applied for the detection of snow-ice regions. Then, an optimal matching filter is used for the sea-ice motion estimation. The derived vector field is homogeneous and shows the ice pack motion along a three-day image data sequence. (Auth. mod.)

50-984

Light scattering by absorbing hexagonal ice crystals in cirrus clouds.

Zhang, J.Y., Xu, L.S., *Applied optics,* Sep. 1, 1995, 34(25), p.5867-5874, 22 refs.

Light scattering, Cloud physics, Ice crystal optics, Wave propagation, Radiation absorption, Polarization (waves), Mathematical models, Statistical analysis

50-985

Ice thickness data, winter 1992-1993. Ottawa, Environment Canada, Atmospheric Environment Service, Ice Climatology Services, Ice Centre, 1995, 97p., In English and French. 1 ref.

Ice surveys, Ice cover thickness, Snow depth, Snow ice interface, Freezeup, Ice breakup, Canada

50-986

Numerical estimation of the permafrost variation on the Daisetsu Mountains, Hokkaido, since the last glacial maximum.

Nakayama, T., *Seppyo,* June 1995, 57(2), p.125-132, In Japanese with English summary. 22 refs.

Permafrost distribution, Permafrost thickness, Permafrost heat balance, Permafrost indicators, Glaciation, Paleoclimatology, Japan—Hokkaido

50-987

Influence of microstructure on effective thermal conductivity of snow cover composed of ice spheres.

Sato, A., Adams, E.E., *Seppyo,* June 1995, 57(2), p.133-140, In Japanese with English summary. 7 refs.

Snow thermal properties, Snow heat flux, Snow density, Snow cover structure, Microstructure, Ice adhesion, Thermal conductivity, Mathematical models

50-988

Automated roof-snow remover.

Kobayashi, T., Kumagai, M., *Seppyo,* June 1995, 57(2), p.141-148, In Japanese with English summary. 9 refs.

Roofs, Snow loads, Snow removal, Snow removal equipment

50-989

Development of a small snow compressor and fracture strength of compacted snow columns.

Miyazaki, N., Harada, T., Kondou, S., Hasemi, T., *Seppyo,* June 1995, 57(2), p.149-154, In Japanese with English summary. 9 refs.

Snow compaction, Snow (construction material), Snow strength, Snow retention

50-990

Stem deformation and bend resistivity of leaned deciduous broad-leaved trees on steep slopes in heavy snow region.

Bojo, C., Nagata, T., Koyama, Y., Matsuda, H., Togashi, K., Sakakibara, M., *Seppyo,* June 1995, 57(2), p.155-162, In Japanese. 13 refs.

Avalanches, Snow loads, Snow retention, Snow hedges, Protective vegetation, Trees (plants), Japan

50-991

New flow law of ice-sheet ice.

Azuma, N., *Seppyo,* June 1995, 57(2), p.163-171, In Japanese. 32 refs.

Ice sheets, Glacier flow, Ice structure, Ice microstructure, Ice deformation, Ice creep, Ice plasticity, Ice friction, Dislocations (materials), Mathematical models

50-992

Recent progress in Vostok ice core analysis studies on ancient air stored in ice cores.

Uchida, T., *Seppyo,* June 1995, 57(2), p.173-174, In Japanese. 17 refs.

Ice cores, Ice composition, Ice air interface, Bubbles, Clathrates, Hydrates, Paleoclimatology, Antarctica—Vostok Station

Selected reports through 1994 on air content and clathrate hydrates in the Vostok ice core are briefly reviewed. Seventeen references are cited of which three are in Japanese and 14 are in English. Periods of low air content in the ice core indicate periods of large fluctuations in ice sheet thickness. The brittle zone at a depth of about 250-750 m where the air content cannot be well determined, indicates the transition between the last glacial maximum and the interglacial stadial. Since air bubbles are decreased and clathrate hydrates are formed in ice at low temperatures and high pressures, it is suggested that the ratio of bubbles to hydrates may be used to distinguish periods of glacials and interglacials.

50-993

Countermeasures in the snow belt. [Gosetsu chitai taisaku ni tsuite]

Okada, H., *Seppyo,* June 1995, 57(2), p.190-194, In Japanese.

Snowfall, Snowstorms, Cold weather operation, Regional planning, Japan

50-994

Trends in winter tires as seen in the patents. [Tokkyo ni miru toyo taiya no hensen]

Iwasaki, S., *Seppyo,* June 1995, 57(2), p.195-199, In Japanese. 2 refs.

Tires, Road icing, Rubber ice friction, Skid resistance, Traction, Japan

50-995

Economic evaluation of snow removal systems in an urban area with heavy snowfall. Part 1: benefit/cost calculations of existing snow removal systems in the commercial area of Nagaoka City.

Morohashi, K., Umemura, T., *Seppyo,* Mar. 1995, 57(1), p.3-10, In Japanese with English summary. 7 refs.

Snow removal, Urban planning, Road maintenance, Cost analysis, Japan

50-996

Hydraulic conveying of snow and ice. Part 2: development of a measuring system for snow dumping channel.

Kitahara, T., *Seppyo,* Mar. 1995, 57(1), p.11-22, In Japanese with English summary. 8 refs.

Snow removal, Drains, Water pipelines, Flow measurement

50-997

Climatic division of snow cover environments in Japan using the mesh climatic data.

Ishizaka, M., *Seppyo,* Mar. 1995, 57(1), p.23-34, In Japanese with English summary. 18 refs.

Snow surveys, Snow cover distribution, Snow water content, Wet snow, Depth hoar, Climatic factors, Japan

50-998

Recent glacier fluctuations in inland Asia.

Ageta, Y., *Seppyo,* Mar. 1995, 57(1), p.35-40, In Japanese. 15 refs.

Glacier surveys, Mountain glaciers, Glacier oscillation, Glacier mass balance, Glacial meteorology, Climatic changes

50-999

Review of recent glacier variations in the Arctic.

Kameda, T., *Seppyo,* Mar. 1995, 57(1), p.41-56, In Japanese. Refs. p.54-56.

Glacier surveys, Glacier oscillation, Glacier mass balance, Climatic changes

50-1000

Recent progress in Vostok ice core analysis: paleoclimate and paleoenvironment.

Osada, K., *Seppyo,* Mar. 1995, 57(1), p.57-59, In Japanese. 15 refs.

Ice cores, Ice composition, Global warming, Paleoclimatology, Antarctica—Vostok Station

Selected reports through 1994 on the Vostok ice core are briefly reviewed. Fifteen references are cited of which two are in Japanese and 13 are in English. The ice core records of Vostok and Greenland indicate that during the last glaciation, when there were warming periods of over 2000 years in Greenland, there were corresponding warming periods in Antarctica. It is suggested that comparative analyses of Vostok, Greenland, and ocean drilling cores may provide a model for the relationship between Antarctica and global climate change in the future.

50-1001

Artificial snow making equipment as seen in the patents. [Tokkyo kara mita jinko kosetsu sochi]

Seki, M., *Seppyo,* Mar. 1995, 57(1), p.84-89, In Japanese. 9 refs.

Artificial snow, Snow manufacturing, Equipment

50-1002
Potential ecological impacts of climate change in the Alps and Fennoscandian mountains. An annex to the Intergovernmental Panel on Climate Change (IPCC), Second Assessment Report, Working Group II-C (Impacts of Climate Change on Mountain Regions).
Guisan, A., ed, Holten, J.I., ed, Spichiger, R., ed, Tessier, L., ed, Geneva, Ed. Conserv. Jard. Bot., 1995, 194p., Refs. passim. For selected papers see 50-1003 through 50-1020.
Climatic changes, Climatic factors, Global change, Mountains, Alpine landscapes, Vegetation patterns, Plants (botany), Plant physiology, Plant ecology, Alpine tundra, Alps, Norway, Finland, Sweden

50-1003
Understanding the impact of climate change on mountain ecosystems: an overview.
Guisan, A., Tessier, L., Holten, J.I., Haeberli, W., Baumgartner, M.F., Potential ecological impacts of climate change in the Alps and Fennoscandian mountains. An annex to the Intergovernmental Panel on Climate Change (IPCC), Second Assessment Report, Working Group II-C (Impacts of Climate Change on Mountain Regions). Edited by A. Guisan, J.I. Holten, R. Spichiger, and L. Tessier, Geneva, Ed. Conserv. Jard. Bot., 1995, p.15-37, Refs. p.33-37.
Climatic changes, Climatic factors, Ecosystems, Global change, Mountains, Alpine tundra, Snow cover effect, Environmental impact

50-1004
Introduction to Fennoscandian mountains.
Holten, J.I., Potential ecological impacts of climate change in the Alps and Fennoscandian mountains. An annex to the Intergovernmental Panel on Climate Change (IPCC), Second Assessment Report, Working Group II-C (Impacts of Climate Change on Mountain Regions). Edited by A. Guisan, J.I. Holten, R. Spichiger, and L. Tessier, Geneva, Ed. Conserv. Jard. Bot., 1995, p.41-43.
Mountains, Ecosystems, Vegetation patterns, Alpine landscapes, Norway

50-1005
Climate change impact on hydrology and cryology.
Sælthun, N.R., Potential ecological impacts of climate change in the Alps and Fennoscandian mountains. An annex to the Intergovernmental Panel on Climate Change (IPCC), Second Assessment Report, Working Group II-C (Impacts of Climate Change on Mountain Regions). Edited by A. Guisan, J.I. Holten, R. Spichiger, and L. Tessier, Geneva, Ed. Conserv. Jard. Bot., 1995, p.45-49, 18 refs.
Climatic changes, Environmental impact, Climatic factors, Hydrology, Geocryology, Runoff, Soil water, Snow cover, Glacier mass balance, Erosion

50-1006
Effects of climate change on plant diversity and distribution.
Holten, J.I., Potential ecological impacts of climate change in the Alps and Fennoscandian mountains. An annex to the Intergovernmental Panel on Climate Change (IPCC), Second Assessment Report, Working Group II-C (Impacts of Climate Change on Mountain Regions). Edited by A. Guisan, J.I. Holten, R. Spichiger, and L. Tessier, Geneva, Ed. Conserv. Jard. Bot., 1995, p.51-57, 32 refs.
Climatic changes, Climatic factors, Environmental impact, Vegetation patterns, Plant ecology, Alpine landscapes, Norway

50-1007
Ecophysiological sensitivity of terrestrial vascular plants to climate change.
Jonasson, S., Potential ecological impacts of climate change in the Alps and Fennoscandian mountains. An annex to the Intergovernmental Panel on Climate Change (IPCC), Second Assessment Report, Working Group II-C (Impacts of Climate Change on Mountain Regions). Edited by A. Guisan, J.I. Holten, R. Spichiger, and L. Tessier, Geneva, Ed. Conserv. Jard. Bot., 1995, p.59-61, 16 refs.
Plant physiology, Temperature effects, Climatic changes, Climatic factors, Plant ecology, Alpine landscapes

50-1008
Sensitivity of alpine plants to potential climate changes.
Skre, O., Potential ecological impacts of climate change in the Alps and Fennoscandian mountains. An annex to the Intergovernmental Panel on Climate Change (IPCC), Second Assessment Report, Working Group II-C (Impacts of Climate Change on Mountain Regions). Edited by A. Guisan, J.I. Holten, R. Spichiger, and L. Tessier, Geneva, Ed. Conserv. Jard. Bot., 1995, p.63-66, 27 refs.
Plant physiology, Climatic changes, Climatic factors, Alpine landscapes, Carbon dioxide

50-1009
Climate change, plant reproductive ecology, and population dynamics.
Molau, U., Potential ecological impacts of climate change in the Alps and Fennoscandian mountains. An annex to the Intergovernmental Panel on Climate Change (IPCC), Second Assessment Report, Working Group II-C (Impacts of Climate Change on Mountain Regions). Edited by A. Guisan, J.I. Holten, R. Spichiger, and L. Tessier, Geneva, Ed. Conserv. Jard. Bot., 1995, p.67-71, 9 refs.
Climatic changes, Climatic factors, Plants (botany), Plant physiology, Plant ecology, Alpine landscapes, Alpine tundra

50-1010
Introduction to the Alps.
Aeschimann, D., Guisan, A., Potential ecological impacts of climate change in the Alps and Fennoscandian mountains. An annex to the Intergovernmental Panel on Climate Change (IPCC), Second Assessment Report, Working Group II-C (Impacts of Climate Change on Mountain Regions). Edited by A. Guisan, J.I. Holten, R. Spichiger, and L. Tessier, Geneva, Ed. Conserv. Jard. Bot., 1995, p.81-85, 18 refs.
Mountains, Geocryology, Vegetation patterns, Alps

50-1011
Approaches to the establishment of future climate scenarios for the alpine region.
Wanner, H., Beniston, M., Potential ecological impacts of climate change in the Alps and Fennoscandian mountains. An annex to the Intergovernmental Panel on Climate Change (IPCC), Second Assessment Report, Working Group II-C (Impacts of Climate Change on Mountain Regions). Edited by A. Guisan, J.I. Holten, R. Spichiger, and L. Tessier, Geneva, Ed. Conserv. Jard. Bot., 1995, p.87-95, 30 refs.
Global change, Climatic changes, Models, Mountains, Climatology, Alps

50-1012
Climate change impacts on glaciers and permafrost.
Haeberli, W., Potential ecological impacts of climate change in the Alps and Fennoscandian mountains. An annex to the Intergovernmental Panel on Climate Change (IPCC), Second Assessment Report, Working Group II-C (Impacts of Climate Change on Mountain Regions). Edited by A. Guisan, J.I. Holten, R. Spichiger, and L. Tessier, Geneva, Ed. Conserv. Jard. Bot., 1995, p.97-103, 41 refs.
Climatic changes, Climatic factors, Glaciers, Permafrost depth, Rock glaciers, Meltwater, Runoff, Alps

50-1013
Climate change impacts on snow cover: modelling case studies in Switzerland and the French Western Alps.
Baumgartner, M.F., Martin, E., Borel, J.L., Potential ecological impacts of climate change in the Alps and Fennoscandian mountains. An annex to the Intergovernmental Panel on Climate Change (IPCC), Second Assessment Report, Working Group II-C (Impacts of Climate Change on Mountain Regions). Edited by A. Guisan, J.I. Holten, R. Spichiger, and L. Tessier, Geneva, Ed. Conserv. Jard. Bot., 1995, p.105-112, 17 refs.
Climatic changes, Climatic factors, Snow cover, Snowmelt, Runoff, Models, Simulation, Switzerland, Alps

50-1014
Impact of atmospheric changes on alpine vegetation: the ecophysiological perspective.
Körner, Ch., Potential ecological impacts of climate change in the Alps and Fennoscandian mountains. An annex to the Intergovernmental Panel on Climate Change (IPCC), Second Assessment Report, Working Group II-C (Impacts of Climate Change on Mountain Regions). Edited by A. Guisan, J.I. Holten, R. Spichiger, and L. Tessier, Geneva, Ed. Conserv. Jard. Bot., 1995, p.113-120, 42 refs.
Carbon dioxide, Plant physiology, Alpine landscapes, Plant ecology, Climatic changes, Ecosystems, Global warming, Atmospheric composition

50-1015
Climate change and the alpine flora: some perspectives.
Theurillat, J.P., Potential ecological impacts of climate change in the Alps and Fennoscandian mountains. An annex to the Intergovernmental Panel on Climate Change (IPCC), Second Assessment Report, Working Group II-C (Impacts of Climate Change on Mountain Regions). Edited by A. Guisan, J.I. Holten, R. Spichiger, and L. Tessier, Geneva, Ed. Conserv. Jard. Bot., 1995, p.121-127, 66 refs.
Climatic changes, Climatic factors, Plant physiology, Plants (botany), Plant ecology, Ecosystems, Alpine landscapes, Alps

50-1016
Effects of climate change on alpine plant diversity and distribution: the modelling and monitoring perspectives.
Guisan, A., Theurillat, J.P., Spichiger, R., Potential ecological impacts of climate change in the Alps and Fennoscandian mountains. An annex to the Intergovernmental Panel on Climate Change (IPCC), Second Assessment Report, Working Group II-C (Impacts of Climate Change on Mountain Regions). Edited by A. Guisan, J.I. Holten, R. Spichiger, and L. Tessier, Geneva, Ed. Conserv. Jard. Bot., 1995, p.129-135, 38 refs.
Climatic changes, Vegetation patterns, Plant physiology, Plants (botany), Climatic factors, Models, Alpine landscapes, Alps

50-1017
Possible responses of mountain vegetation to a global climatic change: the case of the Western Alps.
Ozenda, P., Borel, J.L., Potential ecological impacts of climate change in the Alps and Fennoscandian mountains. An annex to the Intergovernmental Panel on Climate Change (IPCC), Second Assessment Report, Working Group II-C (Impacts of Climate Change on Mountain Regions). Edited by A. Guisan, J.I. Holten, R. Spichiger, and L. Tessier, Geneva, Ed. Conserv. Jard. Bot., 1995, p.137-144, 5 refs.
Plants (botany), Global change, Climatic changes, Climatic factors, Alpine landscapes, Plant physiology, Ecosystems, Models, Alps

50-1018
Assessing sensitivities of forests to climate change: experiences from modelling case studies.
Fischlin, A., Potential ecological impacts of climate change in the Alps and Fennoscandian mountains. An annex to the Intergovernmental Panel on Climate Change (IPCC), Second Assessment Report, Working Group II-C (Impacts of Climate Change on Mountain Regions). Edited by A. Guisan, J.I. Holten, R. Spichiger, and L. Tessier, Geneva, Ed. Conserv. Jard. Bot., 1995, p.145-147, 10 refs.
Trees (plants), Plants (botany), Climatic changes, Climatic factors, Models, Forest land, Global change, Biomass, Alps

50-1019

Dendrochronology of climatic change in mountain environment.

Tessier, L., Guiot, J., Belingard, Ch., Edouard, J.L., Keller, Th., Potential ecological impacts of climate change in the Alps and Fennoscandian mountains. An annex to the Intergovernmental Panel on Climate Change (IPCC), Second Assessment Report, Working Group II-C (Impacts of Climate Change on Mountain Regions). Edited by A. Guisan, J.I. Holten, R. Spichiger, and L. Tessier, Geneva, Ed. Conserv. Jard. Bot., 1995, p.149-157, 12 refs.

Climatic changes, Age determination, Alpine landscapes, Paleoclimatology, Carbon dioxide, Trees (plants), Models, Alps

50-1020

Impacts of climate change on mountain ecosystems: future research and monitoring needs.

Guisan, A., Holten, J.I., Potential ecological impacts of climate change in the Alps and Fennoscandian mountains. An annex to the Intergovernmental Panel on Climate Change (IPCC), Second Assessment Report, Working Group II-C (Impacts of Climate Change on Mountain Regions). Edited by A. Guisan, J.I. Holten, R. Spichiger, and L. Tessier, Geneva, Ed. Conserv. Jard. Bot., 1995, p.179-184, 20 refs.

Climatic changes, Climatic factors, Ecosystems, Alpine landscapes, Models, Global change, International cooperation

50-1021

Biogeochemical study in the Bellingshausen Sea: overview of the STERNA 1992 expedition.

Turner, D.R., Owens, N.J.P., *Deep-sea research. Part II*, July-Sep. 1995, 42(4-5), Topical studies in oceanography. Southern ocean JGOFS: the U.K. "STERNA" study in the Bellingshausen Sea, edited by D.R. Turner, N.J.P. Owens and J. Priddle, p.907-932, Refs. p.930-932.

Sea water, Chemical composition, Sea ice distribution, Ice edge, Biomass, Microbiology, Hydrography, Antarctica—Bellingshausen Sea

A general overview and background of a two-ship study to examine biogeochemical fluxes in the marginal ice-zone of the Bellingshausen Sea, SE Pacific sector of the southern ocean is presented. The major feature studied was an intense band of chlorophyll that was found geographically close to a receding ice-edge. However, the bloom appeared not to be a result of a shallow mixed layer caused by ice-melt stabilization, but rather associated with an oceanic front that coincided with the ice-edge. Details of the hydrographic conditions existing along the 85°W meridian from the ice-edge to open water to the north, and detailed surveys of surface hydrographic conditions, are presented. (Auth.)

50-1022

Snow and ice characteristics of the Bellingshausen Sea, during the spring melt.

Aldworth, E., *Deep-sea research. Part II*, July-Sep. 1995, 42(4-5), Topical studies in oceanography. Southern ocean JGOFS: the U.K. "STERNA" study in the Bellingshausen Sea, edited by D.R. Turner, N.J.P. Owens and J. Priddle, p.1021-1045, 15 refs.

Sea ice distribution, Spaceborne photography, Imaging, Ice volume, Ice edge, Snow physics, Antarctica—Bellingshausen Sea

Snow and ice characteristics are discussed relating to the marginal ice zone and the interior pack ice of the Bellingshausen Sea during the spring melt of 1992. ERS-1 SAR satellite imagery collected between late Nov. and early Dec. 1992 was used to determine the location and movement of the ice edge and to estimate ice concentration in the marginal ice zone during this period. Using two consecutive scenes of image data, the motion of selected floes within the interior pack ice was determined. In order to provide a better understanding of the physical and dynamic processes in this region, the analysis of ground truth collected at a number of stations is discussed in conjunction with the interpretation of satellite imagery. (Auth.)

50-1023

Spatial variability of inorganic nutrients in the marginal ice zone of the Bellingshausen Sea during the Austral spring.

Whitehouse, M.J., Priddle, J., Woodward, E.M.S., *Deep-sea research. Part II*, July-Sep. 1995, 42(4-5), Topical studies in oceanography. Southern ocean JGOFS: the U.K. "STERNA" study in the Bellingshausen Sea, edited by D.R. Turner, N.J.P. Owens and J. Priddle, p.1047-1058, Refs. p.1057-1058.

Sea water, Chemical composition, Plankton, Biomass, Sea ice, Ice melting, Ice models, Antarctica—Bellingshausen Sea

Data on nutrients (nitrate, nitrite, ammonium, phosphate, silicate), biogenic-silica and chlorophyll *a* concentrations were collected along a south-to-north transect through the marginal ice zone of the Bellingshausen Sea during the austral spring of 1992. There was a marked gradient in near surface (≤100 m) concentrations from the most southerly occupied station to the northernmost. Nitrate, phosphate and silicate concentrations decreased along the transect from 33 to 21, 2.2 to 1.2 and 76 to 35 mmol/m^3, respectively. Nitrite, ammonium and biogenic-silica levels increased from 0.04 to 0.16, 0.01 to 2.5 and 0.2 to 4 mmol/m^3, respectively from south to north. Chlorophyll *a* concentrations increased from 0.1 at the most southerly station to >4.0 mg/m^3 in the north. A simple ice-melt model suggests that only a portion of the previous winter's sea-ice had melted in the study area. The impact of this ice-melt on nutrient concentrations was trivial. Predicted time scales of nutrient removal by phytoplankton growth varied for the three nutrients. (Auth. mod.)

50-1024

Distribution of dimethyl suphide and dimethylsulphoniopropionate in antarctic waters and sea ice.

Turner, S.M., Nightingale, P.D., Broadgate, W., Liss, P.S., *Deep-sea research. Part II*, July-Sep. 1995, 42(4-5), Topical studies in oceanography. Southern ocean JGOFS: the U.K. "STERNA" study in the Bellingshausen Sea, edited by D.R. Turner, N.J.P. Owens and J. Priddle, p.1059-1080, Refs. p.1079-1080.

Sea water, Chemical composition, Sea ice, Ice composition, Oceanographic surveys, Plankton, Antarctica—Bellingshausen Sea, —Drake Passage

Dimethyl sulphide (DMS) and particulate and dissolved fractions of dimethylsulphoniopropionate (DMSPp and DMSPd) were measured on two simultaneous cruises through the Drake Passage to the Bellingshausen Sea during Oct. to Dec. 1992. Overall, average surface water concentrations for DMS and DMSPp were 2 nM (0.15-27 nM) and 25.6 nM (2-69 nM), respectively. Higher concentrations were observed in a phytoplankton bloom forming a band between 67.2° and 68.2°S, associated with the Southern Polar Front. Concentrations of DMS + DMSP in ice were very high (up to 546 nM) but in the underlying water were 20 to 500 times lower. Comparison of sulphur data, pigments and phytoplankton species counts showed correlation of DMSPp with 19'-hexanoyloxyfucoxanthin (Hex) and *Phaeocystis* sp. A seasonal cycle for DMS in antarctic surface waters, based on all available literature data, is discussed in terms of the probable antarctic ocean contribution to the global ocean DMS flux. (Auth.)

50-1025

Biogenic hydrocarbons in the particulate material of the water column of the Bellingshausen Sea, Antarctica, in the region of the marginal ice zone.

Cripps, G.C., *Deep-sea research. Part II*, July-Sep. 1995, 42(4-5), Topical studies in oceanography. Southern ocean JGOFS: the U.K. "STERNA" study in the Bellingshausen Sea, edited by D.R. Turner, N.J.P. Owens and J. Priddle, p.1123-1135, 16 refs.

Sea water, Chemical composition, Plankton, Marine biology, Sea ice, Ice composition, Antarctica—Bellingshausen Sea

The biogenic hydrocarbon content of particulate matter of the Bellingshausen Sea in the region of the marginal ice zone (MIZ) has been investigated. Particulates were sampled from four depths to 200 m in pack ice and at the ice edge, and from seven depths to 3000 m in open ocean. Total *n*-alkane concentrations associated with particulates increased from 200 ng/l under the pack ice to 1000 ng/l in the open ocean, and decreased with depth in open water to 15 ng/l at 3000 m. The influence of phytoplankton on particulate material was shown to be negligible under the ice but extended horizontally and vertically as the ice edge retreated. Sea-ice algae did not appear to seed the phytoplankton growth under the ice or the subsequent "bloom" at the MIZ. The alkane signature of phytoplankton from the MIZ bloom was detected at a depth of 200 m near the ice edge, at 500 m in open sea, and in surface sediments (4100 m). It was concluded that the majority of particulate material in the water column was algal in origin. (Auth. mod.)

50-1026

Relationship between suspended particulate material, phytoplankton and zooplankton during the retreat of the marginal ice zone in the Bellingshausen Sea.

Robins, D.B., et al, *Deep-sea research. Part II*, July-Sep. 1995, 42(4-5), Topical studies in oceanography. Southern ocean JGOFS: the U.K. "STERNA" study in the Bellingshausen Sea, edited by D.R. Turner, N.J.P. Owens and J. Priddle, p.1137-1158, Refs. p.1156-1158.

Plankton, Sea ice, Ice cover effect, Sea water, Suspended sediments, Chemical composition, Ice edge, Antarctica—Bellingshausen Sea

The distribution, abundance and composition of suspended particulates, phytoplankton and zooplankton biomass were investigated for the marginal ice zone in the Bellingshausen Sea during the austral spring of 1992. Marked changes were observed between the amount and composition of particulates under the sea-ice and those in open waters. Measures of phytoplankton abundance (chlorophyll) ranged from ca. 0.05 µg/l under the ice to 3 µg/l in the open waters to the north. The high nutrient concentrations and low level of phytoplankton under the ice suggest that this region is typical of over-wintering conditions and provides a suitable background comparison to the development of more productive, recently ice-free waters, further north. The biochemistry of particulates (lipid in particular), a more sensitive measure of environmental growth conditions, showed the area as a whole to be broadly split into two: under ice (light limited) and open water (no light limitation). Total particulate carbon was almost entirely composed of inorganic carbon under the ice; waters away from the ice edge also contained significant levels of inorganic carbon. (Auth. mod.)

50-1027

Water column and sea-ice primary production during Austral spring in the Bellingshausen Sea.

Boyd, P.W., Robinson, C., Savidge, G., Williams, P.J.B., *Deep-sea research. Part II*, July-Sep. 1995, 42(4-5), Topical studies in oceanography. Southern ocean JGOFS: the U.K. "STERNA" study in the Bellingshausen Sea, edited by D.R. Turner, N.J.P. Owens and J. Priddle, p.1177-1200, Refs. p.1197-1200.

Plankton, Algae, Biomass, Ice cover effect, Sea ice, Ice composition, Sea water, Chemical composition, Antarctica—Bellingshausen Sea

The findings of a cruise to study the phytoplankton bloom dynamics associated with the marginal ice zone (MIZ) in the Bellingshausen Sea during austral spring (Nov.-Dec.) 1992 are reported. Biomass and rate process measurements were carried out at stations located in the ice, ice edge and open water along the 85°W meridian in order to establish the productivity of the microalgae associated with sea-ice and in the water column. In addition, a series of transects along 85°W from sea-ice to open water conditions enabled an assessment of the development of phytoplankton populations. Low phytoplankton biomass and production were noted at ice-covered and ice-edge stations and in the open water close to the ice edge. Observations from the transects indicated no development of a classical ice edge bloom despite evidence that sea-ice had retreated more than 100 km during the study period. Survey data along the 85°W line revealed a region of high chlorophyll, centered on 67.5°S, which was initially observed during brash ice. Water column primary production (^{14}C) in this high chlorophyll region was ca. 0.8 g C/m^2/day, more than 8 times higher than noted in the MIZ. Phytoplankton photosynthetic characteristics within this region indicated that cells were adapted to a low light regime. (Auth. mod.)

50-1028

^{13}C and ^{15}N uptake by phytoplankton in the marginal ice zone of the Bellingshausen Sea.

Bury, S.J., Owens, N.J.P., Preston, T., *Deep-sea research. Part II*, July-Sep. 1995, 42(4-5), Topical studies in oceanography. Southern ocean JGOFS: the U.K. "STERNA" study in the Bellingshausen Sea, edited by D.R. Turner, N.J.P. Owens and J. Priddle, p.1225-1252, Refs. p.1248-1252.

Sea water, Chemical composition, Sea ice, Ice composition, Plankton, Biomass, Antarctica—Bellingshausen Sea

A two-ship cruise to the Bellingshausen Sea marginal ice zone (MIZ) in the austral spring-summer 1992 enabled a detailed study of the phytoplankton dynamics during the retreat of the ice sheet. Stations were set up along a transect from within the ice sheet at 70°S, 85°W to the open ocean 67°S, 85°W, and the rates of primary production and nitrogen uptake were determined in the ice and water column using *in situ* ^{13}C and ^{15}N incubation techniques. Nitrogen uptake was subdivided into components of nitrate, ammonium and urea uptake, and fractionated into <20 µm and >20 µm size classes. The ice station water column had a very low biomass, with values integrated to 30 m of 3 mg chl/m^2 and 25 mmol PON/m^2, high nutrient concentrations, and integrated carbon and nitrogen uptake values of 24 mg C/m^2/day and 12 mg N/m^2/day. Nutrient concentrations decreased and biomass and productivity in the water column increased towards the northernmost open water station. (Auth. mod.)

50-1029

Impact of marginal ice zone processes on the distribution of ^{210}Pb, ^{210}Po and ^{234}Th and implications for new production in the Bellingshausen Sea, Antarctica.

Shimmield, G.B., Ritchie, G.D., Fileman, T.W., *Deep-sea research. Part II,* July-Sep. 1995, 42(4-5), Topical studies in oceanography. Southern ocean JGOFS: the U.K. "STERNA" study in the Bellingshausen Sea, edited by D.R. Turner, N.J.P. Owens and J. Priddle, p.1313-1335, Refs. p.1334-1335.

Sea water, Chemical composition, Ice edge, Sea ice, Biomass, Antarctica—Bellingshausen Sea

The vertical distributions of ^{210}Pb, ^{210}Po and ^{234}Th in both dissolved and particulate phases of seawater were measured at five stations along the 85°W meridian in the Bellingshausen Sea. Sea-ice conditions during the expedition ranged from fully ice-covered (fast ice) to open water away from the marginal ice zone. Concurrent primary productivity and algal chlorophyll measurements revealed a band of high productivity at approximately 67°30'S, which remained in a rather static location during ice melt-back. Along the transect a progressive increase in removal ("scavenging") and sinking of ^{210}Pb, ^{210}Po and ^{234}Th occurred towards the north (open water conditions). Application of a simple, irreversible scavenging model, and particulate organic carbon and organic nitrogen to radionuclide ratios measured on suspended particulate matter, allows the calculation of export production for this region. (Auth. mod.)

50-1030

Cosmoglaciology: evolution of ice in interstellar space and the early solar system.

Kouchi, A., Yamamoto, T., *Progress in crystal growth and characterization of materials,* 1995, 30(2-3), p.83-108, 61 refs.

Extraterrestrial ice, Ice physics, Ice formation, Ice sublimation, Amorphous ice, Ice thermal properties, Atmospheric physics, Ice vapor interface, Grain size, Condensation, Phase transformations

50-1031

Time-series study of the spring bloom at the Bering Sea ice edge. I. Physical processes, chlorophyll and nutrient chemistry.

Niebauer, H.J., Alexander, V., Henrichs, S.M., *Continental shelf research,* Dec. 1995, 15(15), p.1859-1877, 26 refs.

Marine biology, Biomass, Plankton, Ice melting, Ice edge, Ice cover effect, Nutrient cycle, Hydrography, Sampling, Seasonal variations, Insolation, Bering Sea

50-1032

Ocean circulation in the Bering Sea marginal ice edge zone from Acoustic Doppler Current Profiler observations.

Okkonen, S., Niebauer, H.J., *Continental shelf research,* Dec. 1995, 15(15), p.1879-1902, 21 refs.

Sea ice distribution, Ice edge, Oceanography, Hydrography, Ocean currents, Air ice water interaction, Ice cover effect, Upwelling, Chlorophylls, Acoustic measurement, Underwater acoustics, Bering Sea

50-1033

On the influence of kriging parameters on the cartographic output—a study in mapping subglacial topography.

Herzfeld, U.C., Eriksson, M.G., Holmlund, P., *Surveys in geophysics,* Oct. 1993, 25(7), p.881-900, 35 refs.

Geophysical surveys, Glacier beds, Glacier thickness, Sensor mapping, Subglacial observations, Topographic features, Statistical analysis, Radio echo soundings, Data processing

50-1034

Atmospheric contribution to hydrologic variations in the Arctic.

Walsh, J.E., Zhou, X., Portis, D., Serreze, M.C., *Atmosphere-ocean,* Dec. 1994, 32(4), p.733-755, With French summary. 30 refs.

Climatology, Marine meteorology, Precipitation (meteorology), Polar atmospheres, Atmospheric composition, Hydrologic cycle, Water vapor, Moisture transfer, Radio echo soundings, Periodic variations, Statistical analysis, Arctic Ocean

50-1035

Role of principles and methods in loess-paleosol investigations.

Pécsi, M., *GeoJournal,* June-July 1995, 36(2-3), p.117-131, 43 refs.

Quaternary deposits, Soil formation, Sedimentation, Loess, Classifications, Paleoecology, Paleoclimatology, Soil composition, Physical properties, Stratigraphy, Lithology

50-1036

Palaeocryogenic analysis of loess-paleosol sequences.

Velichko, A.A., Nechaev, V.P., Porozhnakova, O.M., *GeoJournal,* June-July 1995, 36(2-3), p.133-138, 18 refs.

Quaternary deposits, Pleistocene, Loess, Periglacial processes, Geomorphology, Cryogenic structures, Classifications, Stratigraphy, Ice wedges

50-1037

Processes in soils and paleosoils—a new method for the study of weathering.

Nemecz, E., Csikós-Hartyáni, Z., *GeoJournal,* June-July 1995, 36(2-3), p.139-142, 3 refs.

Soil analysis, Soil formation, Pleistocene, Mineralogy, Loess, Grain size, Weathering, Decomposition

50-1038

Morphoscopy and morphometry of quartz grains from loess and buried soil layers.

Velichko, A.A., Timireva, S.N., *GeoJournal,* June-July 1995, 36(2-3), p.143-149, 17 refs.

Quaternary deposits, Pleistocene, Loess, Sands, Eolian soils, Classifications, Grain size, Microrelief, Surface structure

50-1039

Granulometric investigations of loess profiles in Hungary.

Kis, É., *GeoJournal,* June-July 1995, 36(2-3), p.151-156, 11 refs.

Pleistocene, Sediments, Eolian soils, Soil profiles, Loess, Classifications, Soil texture, Indexes (ratios), Grain size, Correlation, Hungary

50-1040

Application and comparison of the results of optical and scanning electron microscopic methods for grain-shape examination on Quaternary formations.

Molnár, B., Fényes, J., Novoszáth, L., Kuti, L., *GeoJournal,* June-July 1995, 36(2-3), p.157-168, 30 refs.

Quaternary deposits, Loess, Sedimentation, Soil profiles, Scanning electron microscopy, Sands, Classifications, Surface structure, Microrelief, Eolian soils

50-1041

Possibility for subdividing apparently homogeneous depositional sequences by combined use of sedimentological, palaeontological and mathematical methods.

Molnár, B., Geiger, J., *GeoJournal,* June-July 1995, 36(2-3), p.169-177, 15 refs.

Pleistocene, Paleoecology, Sedimentation, Stratigraphy, Loess, Soil texture, Soil profiles, Soil classification, Correlation

50-1042

Mineral composition of the fine-dispersed fractions of loess and soil processes developed in them.

Chizhikova, N.P., Gradusov, B.P., *GeoJournal,* June-July 1995, 36(2-3), p.179-186, 13 refs.

Soil formation, Pleistocene, Sedimentation, Loess, Classifications, Mineralogy, Soil profiles, Stratification

50-1043

Determination of total carbonate content in some representative loess-paleosol profiles.

Gerei, L., Balogh, J., Reményi, M., *GeoJournal,* June-July 1995, 36(2-3), p.187-188, 1 ref.

Pleistocene, Paleoecology, Soil formation, Soil profiles, Loess, Sedimentation, Eolian soils, Mineralogy, Stratigraphy, Particle size distribution, Correlation

50-1044

Determination of the mineral composition of similar types of paleosols intercalated in loess sequences.

Gerei, L., Reményi, M., *GeoJournal,* June-July 1995, 36(2-3), p.189-191, 8 refs.

Pleistocene, Paleoecology, Soil formation, Mineralogy, Loess, Clay minerals, Stratification, Classifications, Particle size distribution

50-1045

Method for the study of Quaternary environmental evolution of the loess plateau in China.

Zhang, Z.H., Wei, M.J., Zhao, J.P., *GeoJournal,* June-July 1995, 36(2-3), p.193-197, 4 refs.

Paleoclimatology, Paleoecology, Quaternary deposits, Soil profiles, Loess, Eolian soils, Mineralogy, Correlation, China

50-1046

Identification of paleosol types and their applicability for paleoclimatic reconstructions.

Morozova, T., *GeoJournal,* June-July 1995, 36(2-3), p.199-205, 22 refs.

Pleistocene, Paleoclimatology, Soil formation, Soil profiles, Soil classification, Loess, Diagenesis

50-1047

Composition, properties and radiocarbon age of humus in paleosols.

Chichagova, O.A., *GeoJournal,* June-July 1995, 36(2-3), p.207-212, 16 refs.

Pleistocene, Organic soils, Soil chemistry, Soil composition, Paleoecology, Soil dating, Radioactive age determination, Diagenesis

50-1048

Palaeoecological reconstruction of the Late Pleistocene, based on loess Malacofauna in Hungary.

Krolopp, E., Sümegi, P., *GeoJournal,* June-July 1995, 36(2-3), p.213-222, 65 refs.

Pleistocene, Paleoecology, Paleoclimatology, Loess, Marine deposits, Age determination, Stratigraphy, Soil formation, Sedimentation, Hungary

50-1049

Methodology of loess palynology.

Zelikson, E.M., *GeoJournal,* June-July 1995, 36(2-3), p.223-228, 24 refs.

Paleoclimatology, Paleoecology, Palynology, Loess, Stratigraphy, Classifications, Spectra, Vegetation patterns, Correlation

50-1050

Loess-paleosol dating method.

Zhu, Z.Y., *GeoJournal,* June-July 1995, 36(2-3), p.243-249, 16 refs.

Paleoclimatology, Pleistocene, Soil dating, Quaternary deposits, Loess, Soil formation, Stratigraphy, Sedimentation, Correlation

50-1051

Paleomagnetic changes within the Brunhes Epoch in the Basaharc loess profile, Hungary.

Balogh, J., *GeoJournal,* June-July 1995, 36(2-3), p.251-254, 7 refs.

Pleistocene, Soil profiles, Loess, Stratigraphy, Sedimentation, Magnetic properties, Hungary

50-1052

Parent materials of Wrangel Island.

Oganesian, A.Sh., Susekova, N.G., *Eurasian soil science,* July 1995, 27(7), p.20-35, Translated from Pochvovedenie. 21 refs.

Arctic landscapes, Soil formation, Quaternary deposits, Mineralogy, Sedimentation, Bedrock, Rock properties, Classifications, Russia—Wrangel Island

50-1053

Instability trends of inertially coupled galloping, part 1: initiation.

Yu, P., Popplewell, N., Shah, A.H., *Journal of sound and vibration,* June 15, 1995, 183(4), p.663-678, 13 refs.

Transmission lines, Power line icing, Ice loads, Ice cover effect, Stability, Oscillations, Mechanical properties, Mathematical models, Simulation

50-1054

Instability trends of inertially coupled galloping, part 2: periodic variations.

Yu, P., Popplewell, N., Shah, A.H., *Journal of sound and vibration,* June 15, 1995, 183(4), p.679-691, 5 refs.

Transmission lines, Power line icing, Stability, Mechanical properties, Oscillations, Vibration, Ice cover effect, Ice solid interface, Periodic variations, Mathematical models

50-1055

Two examples of expert knowledge based system for avalanche forecasting and protection.

Buisson, L., Giraud, G., *Surveys in geophysics,* Nov. 1995, 16(5-6), p.603-619, 23 refs.

Avalanche forecasting, Avalanche mechanics, Avalanche modeling, Avalanche engineering, Safety, Mathematical models, Computerized simulation

50-1056

Snow mechanics and avalanche formation: field experiments on the dynamic response of the snow cover.

Schweizer, J., Schneebeli, M., Fierz, C., Föhn, P.M.B., *Surveys in geophysics,* Nov. 1995, 16(5-6), p.621-633, 15 refs.

Avalanche mechanics, Avalanche triggering, Avalanche formation, Snow mechanics, Snow cover stability, Snow deformation, Mechanical tests, Ice solid interface, Dynamic loads, Impact tests, Stress concentration

50-1057

Field measurements and model calibration in avalanche dynamics.

Nettuno, L., *Surveys in geophysics,* Nov. 1995, 16(5-6), p.635-648, 28 refs.

Avalanche mechanics, Snow mechanics, Simulation, Rheology, Mechanical tests, Avalanche modeling, Measuring instruments, Mathematical models

50-1058

Measurements of powder snow avalanche—nature.

Nishimura, K., Sandersen, F., Kristensen, K., Lied, K., *Surveys in geophysics,* Nov. 1995, 16(5-6), p.649-660, 12 refs.

Avalanche mechanics, Snow air interface, Blowing snow, Avalanche wind, Snow physics, Cloud physics, Fluid dynamics, Turbulent flow, Flow measurement

50-1059

Measurements of powder snow avalanches—laboratory.

Keller, S., *Surveys in geophysics,* Nov. 1995, 16(5-6), p.661-670, 9 refs.

Avalanche mechanics, Snow physics, Blowing snow, Snow air interface, Turbulent flow, Velocity measurement, Fluid dynamics, Avalanche tracks, Ultrasonic tests, Simulation, Correlation

50-1060

Comparison of two avalanche-models with exemplary avalanches of Tyrol and Switzerland and the effects of hazard zoning.

Weiler, C., *Surveys in geophysics,* Nov. 1995, 16(5-6), p.671-679, 7 refs.

Avalanche modeling, Avalanche mechanics, Avalanche tracks, Velocity measurement, Avalanche forecasting, Correlation, Statistical analysis, Hydraulics, Switzerland

50-1061

Avalanche mapping and related G.I.S. applications in the Catalan Pyrenees.

Furdada, G., Martí, G., Oller, P., García, C., Mases, M., Vilaplana, J.M., *Surveys in geophysics,* Nov. 1995, 16(5-6), p.681-693, 15 refs.

Avalanche forecasting, Mapping, Geophysical surveys, Avalanche tracks, Topographic features, Photointerpretation, Computer applications, Spain—Pyrenees

50-1062

Experimental and theoretical determination of concentration profiles and influence of particle characteristics in blowing snow.

Naaim, M., Martinez, H., *Surveys in geophysics,* Nov. 1995, 16(5-6), p.695-710, 10 refs.

Avalanche mechanics, Snow physics, Blowing snow, Drift, Fluid dynamics, Mass transfer, Snow air interface, Particle size distribution, Profiles, Turbulent boundary layer, Simulation, Lasers, Imaging

50-1063

Comparison of requirements for modeling snowdrift in the case of outdoor and wind tunnel experiments.

Naaim-Bouvet, F., *Surveys in geophysics,* Nov. 1995, 16(5-6), p.711-727, 20 refs.

Snow physics, Blowing snow, Snowdrifts, Wind tunnels, Fluid dynamics, Simulation, Design criteria, Mathematical models, Correlation, Accuracy

50-1064

Functioning of the avalanche starting zones which undergo snow-transport by wind: field observations and computer modeling.

Sivardière, F., Castelle, T., Guyomarc'h, G., Mérindol, L., Buisson, L., *Surveys in geophysics,* Nov. 1995, 16(5-6), p.729-741, 5 refs.

Avalanche mechanics, Snow physics, Avalanche triggering, Blowing snow, Drift, Snow accumulation, Snow air interface, Turbulent boundary layer, Computerized simulation

50-1065

Accumulation sequence of Chinese loess and climatic records of Greenland ice core during the last 130 ka.

An, Z.S., et al, *Chinese science bulletin,* Aug. 1995, 40(15), p.1272-1276, 11 refs.

Paleoclimatology, Atmospheric circulation, Loess, Eolian soils, Sediment transport, Ice sheets, Ice cores, Air temperature, Temperature variations, Correlation, Greenland—Summit, China

50-1066

Quaternary Fourier stratigraphy: orbital templates and Milankovitch anomalies.

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Paleoclimatology, Quaternary deposits, Insolation, Sedimentation, Isotope analysis, Periodic variations, Ice volume, Ice sheets, Ice melting, Stratigraphy, Analysis (mathematics), Spectra

50-1067

Thermal calculation for anti-icer with micro-ejector.

Qui, X.G., Yu, X.Z., *Chinese journal of aeronautics,* 1995, 8(1), p.74-79, 4 refs.

Aircraft icing, Heating, Ice removal, Fluid dynamics, Thermal diffusion, Air flow, Flow control, Turbulent diffusion, Heat transfer, Mathematical models, Computerized simulation

50-1068

***Festuca edlundiae* (Poaceae), a high arctic, new species compared enzymatically and morphologically with similar *Festula* species.**

Aiken, S.G., Consaul, L.L., Lefkovitch, L.P., *Systematic botany,* July-Sep. 1995, 20(3), p.374-392, 18 refs.

Ecosystems, Plants (botany), Arctic landscapes, Plant ecology, Grasses, Distribution, Structural analysis, Vegetation patterns, Classifications, Sampling

50-1069

Origin and thermal evolution of icy satellites.

Coradini, A., Federico, C., Forni, O., Magni, G., *Surveys in geophysics,* July 1995, 16(4), p.533-591, Refs. p.585-591.

Satellites (natural), Extraterrestrial ice, Geologic processes, Geocryology, Cryogenic structures, Rheology, Ice physics, Phase transformations, Thermal conductivity

50-1070

Plating aluminum wheels.

Graves, B.A., *Products finishing,* July 1995, 59(5), p.42-46.

Vehicle wheels, Corrosion, Protective coatings, Manufacturing, Cold weather performance

50-1071

Innovative materials development and testing. Volume 2: pothole repair.

Wilson, T.P., Romine, A.R., *U.S. Strategic Highway Research Program. Report,* 1993, SHRP-H-353, 223p., 5 refs.

Bituminous concretes, Pavements, Road maintenance, Cost analysis

50-1072

Alternative deicing chemicals research.

Woodham, D., *Colorado Department of Transportation. Report,* Jan. 1994, CDOT-DTD-R-94-4, 21p. + appends., 7 refs.

Road icing, Chemical ice prevention, Salting, Sanding, Road maintenance, Cost analysis, United States—Colorado

50-1073

National winter storms operations plan. *U.S. National Oceanic and Atmospheric Administration. Office of the Federal Coordinator for Meteorological Services and Supporting Research. Report,* Oct. 1995, FCM-P13-1995, Var. p.

Snowstorms, Ice storms, Weather forecasting, Marine meteorology

50-1074

Winter low-flow balance of the semiarid White River, Nebraska and South Dakota.

Ferrick, M.G., Mulherin, N.D., Calkins, D.J., CR 95-15, *U.S. Army Cold Regions Research and Engineering Laboratory. Report,* July 1995, 26p., ADA-299 537, 22 refs.

Rivers, River ice, Water balance, River flow, Stream flow, Ground water, United States—Nebraska, United States—South Dakota, United States—White River

Low-flow studies are needed to quantify the effects of water consumption on stream flow, water quality, groundwater resources, and contaminant transport. The low-flow water balance of a river in a cold region is simplified in winter because evapotranspiration is negligible, irrigation water withdrawals and diversions are halted, and precipitation occurs largely as snow, minimizing the spatial and temporal variability of runoff. The authors investigated the monthly low-flow water balance of White River (NE and SD) reaches over seven consecutive winters. Water going into or out of storage as ice or melt, obtained with an air temperature index model, can be a dominant component of the water balance. The point estimate method is used to account for parameter uncertainty and variability, providing the mean, variance, and limits of dependent variables such as water storage as ice and inflow from a subbasin. Negative surface water yield from several-thousand-sq-km subbasins occurred regularly through the period, indicating a significant flow from the river to the alluvial aquifers. The winter water balance results suggest either a perched river or a coupled surface water-groundwater hydrologic system in particular subbasins, consistent with the field investigations of Rothrock (1942). The winter flow exchange between the surface and subsurface can be used to estimate the annual exchange for both hydrologic conditions.

50-1075

Rapid screening of metals using portable high-resolution x-ray fluorescence spectrometers.

Hewitt, A.D., SR 95-14, *U.S. Army Cold Regions Research and Engineering Laboratory. Special report,* Apr. 1995, 13p., ADA-299 293, 20 refs.

X ray analysis, Soil analysis, Metals, Soil composition, Soil pollution, Refraction, Spectroscopy, Sediments

Analysis of copper, zinc, arsenic, lead, chromium, cobalt, nickel, mercury, thallium, selenium, silver, antimony, cadmium, tin, and barium was performed on soils and other particle matrices using two field-portable high-resolution X-ray fluorescence spectrometers (XRF). Quantitative determinations were based on fundamental parameter analysis and a second method that relies on analyte response factors and uses the Compton Kα incoherent backscatter peak for matrix normalization. These two methods of instrumental analysis require only a few reference materials and are relatively insensitive to sample matrix composition. This study assessed the capability of these two rapid XRF analysis methods by determining metal concentrations in reference materials, field samples, and laboratory spiked soils. With the exception of nickel, cobalt, and chromium, concentrations within 50% of the expected values were consistently obtained at and below 1000 μg/g.

50-1076
Problem of plastic pipeline construction in the oil and gas industry. [O probleme sooruzheniia plastmassovykh truboprovodov v neftianoĭ i gazovoĭ promyshlennosti]
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Gas pipelines, Pipelines, Cold weather performance, Plastics, Welding

50-1077
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Municipal engineering, Utilities, Cold weather operation, Winter maintenance, Design criteria, Soil freezing, Pipeline freezing, Permafrost transformation, Countermeasures

50-1078
Near-infrared absorption coefficients of solid nitrogen as a function of temperature.
Tryka, K.A., Brown, R.H., Anicich, V., *Icarus,* Aug. 1995, 116(2), p.409-414, 16 refs.
Extraterrestrial ice, Satellites (natural), Remote sensing, Ice physics, Phase transformations, Ground ice, Surface temperature, Simulation, Radiation absorption, Infrared spectroscopy, Spectra

50-1079
Snowfall associated with a terrain-generated convergence zone during the Winter Icing and Storms Project.
Wesley, D.A., Rasmussen, R.M., Bernstein, B.C., *Monthly weather review,* Oct. 1995, 123(10), p.2957-2977, 18 refs.
Atmospheric circulation, Atmospheric physics, Fronts (meteorology), Snowfall, Precipitation (meteorology), Wind direction, Topographic effects, Sounding, Radar echoes, Advection

50-1080
Quaternary stratigraphy of the buried valleys of the lower Red Deer River, Alberta, Canada.
Evans, D.J.A., Campbell, I.A., *Journal of quaternary science,* June 1995, 10(2), p.123-148, 40 refs.
Pleistocene, Quaternary deposits, Glacial geology, Glacial deposits, Stratigraphy, Sedimentation, Bedrock, Geochronology, Subsurface investigations, Valleys, Canada—Alberta—Red Deer River

50-1081
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Paleoecology, Quaternary deposits, Lacustrine deposits, Lithology, Sedimentation, Geochronology, Marine deposits, Classifications, Greenland—Disko

50-1082
Direct comparison of UK temperatures and Greenland snow accumulation rates, 15,000-12,000 yr ago.
Lowe, J.J., Coope, G.R., Sheldrick, C., Harkness, D.D., Walker, M.J.C., *Journal of quaternary science,* June 1995, 10(2), p.175-180, 25 refs.
Paleoclimatology, Paleoecology, Glacial deposits, Quaternary deposits, Stratigraphy, Air temperature, Temperature variations, Ice sheets, Ice cores, Snow accumulation, Correlation, Radioactive age determination, Geochronology, United Kingdom, Greenland

50-1083
Glacial lake development and marine inundation, Deer Lake area, Newfoundland, Canada: topographically controlled deglaciation of an interior basin—comment and reply.
Brookes, I.A., Batterson, M.J., Liverman, D.G.E., Kirby, G.E., *Journal of quaternary science,* June 1995, 10(2), p.181-184, 26 refs. For paper under discussion see 48-5012.
Geomorphology, Pleistocene, Glacial lakes, Glacial hydrology, Topographic effects, Ice dams, Lacustrine deposits, Quaternary deposits, Canada—Newfoundland—Deer Lake

50-1084
Sequence analysis of Upper Pleistocene (Wisconsinan) glaciolacustrine deposits of the north-shore bluffs of Lake Ontario, Canada.
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Pleistocene, Quaternary deposits, Glacial geology, Glacial deposits, Glacier oscillation, Glacial lakes, Lacustrine deposits, Stratigraphy, Sedimentation, Canada—Ontario, Lake

50-1085
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Concrete durability, Frost resistance, Freeze thaw tests, Concrete slabs, Mechanical tests, Standards

50-1086
Spreader of choice for Michigan's snow-bound Upper Peninsula.
Haag, J., *Public works,* Sep. 1995, 126(10), p.62-64.
Road maintenance, Road icing, Winter maintenance, Ice control, Motor vehicles, Sanding, Salting, Cold weather performance

50-1087
Sisters Creek Formation: Pleistocene sediments representing a nonglacial interval in southwestern British Columbia at about 18 ka.
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Pleistocene, Paleoclimatology, Quaternary deposits, Glacier oscillation, Stratigraphy, Sedimentation, Radioactive age determination, Canada—British Columbia—Sisters Creek Formation

50-1088
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Trees (plants), Plant ecology, Acclimatization, Frost resistance, Plant physiology, Plant tissues, Chemical analysis

50-1089
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Trees (plants), Forest ecosystems, Climatic changes, Growth, Plant physiology, Plant ecology, Temperature effects, Mathematical models, Finland

50-1090
Understory alder in three boreal forests of Alaska: local distribution and effects on soil fertility.
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50-1091
Inhibition of growth, and effects on nutrient uptake of arctic graminoids by leaf extracts—allelopathy or resource competition between plants and microbes?
Michelsen, A., Schmidt, I.K., Jonasson, S., Dighton, J., Jones, H.E., Callaghan, T.V., *Oecologia,* Sep. 1, 1995, 103(4), p.407-418, 41 refs.
Plant ecology, Plant physiology, Subarctic landscapes, Nutrient cycle, Leaching, Growth, Biomass, Soil microbiology, Soil chemistry, Fungi

50-1092
Diamond exploration in glaciated terrain: a Russian perspective.
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Mining, Sampling, Exploration, Geomorphology, Glaciation, Glacial deposits, Sedimentation, Mineralogy, Russia—Archangelsk

50-1093
Thermophysiological characteristics of protective clothing for forestry workers. [Metsurien suojavaatetuksen lämpöfysiologiset ominaisuudet]
Meinander, H., Laamanen, H., *Finland. Technical Research Centre. VTT research notes (Valtion teknillinen tutkimuskeskus. VTT tiedotteita),* 1994, No.1616, 29p. + appends., In Finnish. 13 refs.
Clothing, Thermal insulation, Physiological effects, Human factors engineering, Cold weather performance

50-1094
Analytical methods for characterization of explosives-contaminated sites on U.S. Army installations.
Jenkins, T.F., Walsh, M.E., Thorne, P.G., MP 3706, *SPIE—The International Society for Optical Engineering. Proceedings,* 1995, Vol.2504, Environmental Monitoring and Hazardous Waste Site Remediation, Munich, Germany, June 19-21, 1995, p.342-349, 40 refs.
Soil pollution, Soil chemistry, Soil tests, Explosives, Military facilities

The U.S. Army manufactures munitions at facilities throughout the United States. Many of these facilities are contaminated with residues of explosives from production and disposal of off-specification and out-of-date munitions. The first step in remediating these sites is careful characterization. Currently sites are being characterized using a combination of on-site field screening and off-site laboratory analysis. Most of the contamination is associated with TNT (2,4,6-trinitrotoluene) and RDX (hexahydro-1,3,5,-trinitro-1,3,5-triazine) and their manufacturing impurities and environmental transformation products. Both colorimetric and enzyme immunoassay-based field screening methods have been used successfully for on-site characterization. These methods have similar detection capabilities but differ in their selectivity. Although field screening is very cost-effective, laboratory analysis is still required to fully characterize a site. Laboratory analysis for explosives residues in the United States is generally conducted using high-performance liquid chromatography equipped with a UV detector. Air-dried soils are extracted with acetonitrile in an ultrasonic bath. Water is analyzed directly if detection limits in the range of 10-20 μg/L are acceptable, or preconcentrated using either salting-out solvent extraction with acetonitrile or solid phase extraction.

50-1095
Development of colorimetric field screening methods for munitions compounds in soil.
Jenkins, T.F., Walsh, M.E., Schumacher, P.W., Thorne, P.G., MP 3707, *SPIE—The International Society for Optical Engineering. Proceedings,* 1995, Vol.2504, Environmental Monitoring and Hazardous Waste Site Remediation, Munich, Germany, June 19-21, 1995, p.324-333, 27 refs.
Soil pollution, Soil chemistry, Soil tests, Explosives, Military facilities

Simple colorimetric tests have been developed to screen for the presence of TNT, TNB, DNT, DNB, tetryl, RDX, HMX, nitroglycerine (NG), PETN, nitrocellulose (NC), nitroguanidine (NQ), picric acid and ammonium picrate in soil. Soils are extracted by manual shaking with acetone. For the nitroaromatics, the extracts are reacted with potassium hydroxide and sodium sulfite to form their colored Janowsky complexes. For RDX, HMX, NG, PETN, NC and NQ, extracts are passed through an anion exchange resin to remove nitrate, and then acidified with acetic acid; the nitramines and nitrate esters are reduced with zinc to form nitrous acid. The nitrous acid is detected by the Griess reaction using a Hach Nitriver 3 powder pillow, which produces a highly colored azo dye. Detection of these analytes can be obtained visually and concentrations estimated from absorbance measurements at 540 nm for TNT, TNB and tetryl, 570 nm for DNTs and DNB, and at 510 nm for RDX, HMX, NG, PETN, NC and NQ. For picric acid/ammonium picrate, the acetone extract is passed through a basic ion-exchange column that retains picrate ion. The column is rinsed with methanol to elute interferences, and the picrate is desorbed with acetone containing several drops of sulfuric acid. The extract is diluted with deionized water, and the concentration of picrate is obtained from the absorbance at 400 nm. Detection limits are about 1 μg/g for all analytes except NG, NC and NQ, which are slightly higher.

50-1096

Use of geosynthetic capillary barriers to reduce moisture migration in soils.

Henry, K.S., MP 3708, *Geosynthetics international,* 1995, 2(5), p.883-888, 10 refs.

Soil water migration, Capillarity, Geotextiles, Vapor barriers, Soil stabilization

Capillary theory is reviewed and applied to the use of capillary barriers in soils. Specific emphasis is placed on the use of geosynthetics as capillary barriers. Theory and experimental evidence indicate that capillary barriers placed horizontally in soils above the water table significantly reduce the rate of water flow across them in response to hydraulic gradients. As a result, they are very effective in keeping soil from becoming saturated with water due to capillary action.

50-1097

Two-dimensional dynamic simulation of solid fracture. Part II: examples.

Potapov, A.V., Campbell, C.S., Hopkins, M.A., MP 3709, *International journal of modern physics C,* 1995, 6(3), p.399-425, 10 refs.

Fracturing, Crack propagation, Compressive properties, Impact strength, Shear strength, Computerized simulation

This paper uses a model to simulate fracture in many simple systems with the goal of evaluating the advantages and deficiencies of the model. The examples include compressive failure of a rectangular sample, four-point shear failure of a beam and the impact of particles with a plate and binary impacts of particles. Where possible, the simulated results seem to be in good agreement with typical experimental results. Finally, a simulation of ball-milling, which involves the flow and fracture of many particles, is shown to demonstrate the overall utility of the model.

50-1098

Colorado storm and avalanches of February 1995.

McCarty, D., Williams, K., *Avalanche review,* Nov. 1995, 14(1), p.1,4,5,8.

Snowstorms, Snowfall, Snow water equivalent, Snow cover stability, Avalanches, Avalanche tracks, Accidents, Cost analysis, United States—Colorado

50-1099

Industry gets an edge from the Corps.

Chalmers, P., MP 3710, *Engineer update,* Nov. 1995, 19(11), p.12.

Economic development, Research projects, Ice control, Winter concreting, Composite materials, Reinforced concretes

Private companies win contracts after subcontracting to CRREL (U.S. Army Cold Regions Research and Engineering Laboratory) for winter concreting. Niagara river ice control, and composite plastic grid-reinforced concretes.

50-1100

Borehole video analysis of a temperate glacier's englacial and subglacial structure: implications for glacier flow.

Harper, J.T., Humphrey, N.F., *Geology,* Oct. 1995, 23(10), p.901-904, 32 refs.

Glaciology, Glacier flow, Boreholes, Subglacial observations, Ice structure, Layers, Glacier beds, Ice solid interface, Sliding, Photography

50-1101

Reef drowning during the last deglaciation: evidence for catastrophic sea-level rise and ice-sheet collapse: comment and reply.

Clark, P.U., Blanchon, P., Shaw, J., *Geology,* Oct. 1995, 23(10), p.957-959, 34 refs. For paper under discussion see 49-3088.

Oceanography, Marine geology, Sea level, Paleoclimatology, Pleistocene, Ice sheets, Glacier oscillation, Glacier melting, Ice rafting, Ice cores, Marine deposits, Correlation

50-1102

Preparation of aluminoxane from trimethylaluminium at a defined surface of deeply cooled ice.

Winter, H., Schnuchel, W., Sinn, H., *Macromolecular symposia,* July 1995, Vol.97, Hamburger Makromolekulares Kolloquium. Hamburg, Germany, Sep. 22-23, 1994, p.119-125, 8 refs.

Metals, Ice physics, Solutions, Decomposition, Solubility, Sedimentation, Enthalpy, Ice water interface, Ice heat flux, Manufacturing

50-1103

Oxidation of S(IV) during riming by cloud droplets.

Iribarne, J.V., Barrie, L.A., *Journal of atmospheric chemistry,* June 1995, 21(2), p.97-114, 14 refs.

Cloud physics, Ice physics, Supercooled clouds, Cloud droplets, Heterogeneous nucleation, Aerosols, Ice water interface, Ice formation, Ion density (concentration), Simulation, Chemical analysis

50-1104

Determining past atmospheric HCl mixing ratios from ice core analyses.

Dominé, F., Thibert, E., Silvente, E., Legrand, M., Jaffrezo, J.L., *Journal of atmospheric chemistry,* June 1995, 21(2), p.165-186, 53 refs.

Atmospheric composition, Precipitation (meteorology), Cloud physics, Snow crystal growth, Ice cores, Sampling, Snow air interface, Vapor diffusion, Solubility, Simulation, Chemical analysis

50-1105

Marine ecology of the Laguna San Rafael (southern Chile): ice scour and opportunism.

Davenport, J., *Estuarine, coastal and shelf science,* July 1995, 41(1), p.21-37, 15 refs.

Marine biology, Oceanographic surveys, Ecology, Biomass, Ecosystems, Sampling, Glacial hydrology, Icebergs, Calving, Ice scoring, Water waves, Chile—Laguna San Rafael

50-1106

Sliding rocks at the Racetrack, Death Valley: what makes them move.

Reid, J.B., Jr., et al, *Geology,* Sep. 1995, 23(9), p.819-822, 8 refs.

Rock mechanics, Sliding, Ice solid interface, Ice sheets, Floating ice, Drift, Wind factors, Mapping, United States—California—Death Valley

50-1107

Operations management for urban snow removal and disposal.

Campbell, J.F., Langevin, A., *Transportation research part A,* Sep. 1995, 29A(5), p.359-370, 36 refs.

Urban planning, Cold weather operation, Snow removal, Snow removal equipment, Snow disposal, Logistics, Route surveys, Computer programs

50-1108

Planar forcing of floating ice sheets.

Zhao, Z.G., Dempsey, J.P., *International journal of solids and structures,* Jan. 1996, 33(1), p.19-31, 10 refs. For another version see 47-3750.

Floating ice, Ice mechanics, Ice sheets, Ice water interface, Hydrodynamics, Dynamic loads, Ice deformation, Mathematical models

50-1109

Predicting brick frost-resistance, I.

Robinson, G.C., Butler, D., Smalley, A., *American Ceramic Society. Bulletin,* Aug. 1995, 74(8), p.57-61, 10 refs.

Bricks, Construction materials, Frost resistance, Frost forecasting, Freeze thaw tests, Mechanical tests, Cracking (fracturing), Standards, Classifications

50-1110

Magnetic susceptibility variations in Upper Pleistocene deep-sea sediments of the NE Atlantic: implications for ice rafting and paleocirculation at the last glacial maximum.

Robinson, S.G., Maslin, M.A., McCave, I.N., *Paleoceanography,* Apr. 1995, 10(2), p.221-250, Refs. p.247-250.

Oceanography, Pleistocene, Paleoclimatology, Ocean currents, Glacier oscillation, Ice rafting, Bottom sediment, Lithology, Stratigraphy, Remanent magnetism, Magnetic properties, Geochronology, Correlation, Atlantic Ocean

50-1112

Phase transition of the hydrogen-bonded crystals and ice.

Fujii, K., *Journal of chemical physics,* Oct. 15, 1995, 103(15), p.6662-6664, 20 refs.

Ice physics, High pressure ice, Hydrogen bonds, Ice crystal structure, Molecular structure, Phase transformations, Molecular energy levels, Temperature effects

50-1113

Potential of using spaceborne millimeter wavelength radar for ice cloud studies.

Matrosov, S.Y., Atlas, D., Heymsfield, A.J., Kropfli, R.A., *SPIE—The International Society for Optical Engineering. Proceedings,* 1994, Vol.2309, Passive infrared remote sensing of clouds and the atmosphere II. Edited by D.K. Lynch, p.84-88, 8 refs.
DLC QC974.5.P38

Cloud cover, Optical properties, Radiation balance, Cloud physics, Remote sensing, Ice crystal optics, Radar echoes, Reflectivity, Particle size distribution

50-1114

On the particle characteristics of PSCs inferred from polarimetric experiment.

Maslowska, A., Herman, M., *SPIE—The International Society for Optical Engineering. Proceedings,* 1994, Vol.2309, Passive infrared remote sensing of clouds and the atmosphere II. Edited by D.K. Lynch, p.370-374, 14 refs.
DLC QC974.5.P38

Polar atmospheres, Polar stratospheric clouds, Sounding, Cloud physics, Particles, Light scattering, Optical properties, Photometry, Refractivity

50-1115

Specular scattering and crystal dynamics in cirrus clouds.

Lynch, D.K., Shanks, J.G., Gedzelman, S.D., *SPIE—The International Society for Optical Engineering. Proceedings,* 1994, Vol.2309, Passive infrared remote sensing of clouds and the atmosphere II. Edited by D.K. Lynch, p.376-383, 12 refs.
DLC QC974.5.P38

Cloud cover, Cloud physics, Light scattering, Specular reflection, Ice crystal optics, Ice crystal size, Orientation, Optical phenomena

50-1116

Sedimentology and geomorphology of fjords.

Syvitski, J.P.M., Shaw, J., Geomorphology and sedimentology of estuaries. Edited by G.M.E. Perillo and Developments in Sedimentology. Vol.53, Amsterdam, Elsevier Science Publishers B.V., 1995, p.113-178, Refs. p.168-178.
DLC GB451.2.G466

Estuaries, Geomorphology, Marine geology, Sediment transport, Sedimentation, Mass transfer, Marine deposits, Glacial hydrology, Ice rafting, Calving, Ice water interface

50-1117

Comparison of summer and winter inorganic carbon, oxygen and nutrient concentrations in antarctic sea ice brine.

Gleitz, M., Van der Loeff, M.M.R., Thomas, D.N., Dieckmann, G.S., Millero, F.J., *Marine chemistry,* Oct. 1995, 51(2), p.81-91, 49 refs.

Marine biology, Algae, Nutrient cycle, Biomass, Water chemistry, Geochemistry, Sampling, Brines, Ice water interface, Seasonal variations, Ice cover effect, Antarctica—Weddell Sea

During summer (Jan. 1991) and winter (Apr. 1992) cruises to the southern Weddell Sea, brine samples were collected from first year sea ice and analyzed for salinity, temperature, dissolved oxygen and major nutrient concentrations. Additionally, the carbonate system was determined from measurements of pH and total alkalinity. During winter, brine chemical composition was largely determined by seawater concentration in the course of freezing. Brine temperatures ranged from -1.9 to -6.7°C. Removal of carbon from the total inorganic carbon pool was related to reduced nutrient concentrations, indicating the presence of photosynthetically active ice algal assemblages in the winter sea ice. However, nutrient and inorganic carbon concentrations did not generally reach growth limiting levels for phytoplankton. The concurrent depletion of major nutrients generally corresponded to uptake ratios predicted from phytoplankton biochemical composition. Primary productivity in summer sea ice is apparently sustained until inorganic resources are fully exhausted, resulting in brine chemical compositions that differ profoundly from those of surface waters. This may have important implications for

pathways of ice algal carbon acquisition, carbon isotope fractionation, and for species distribution in the open water phytoplankton. (Auth. mod.)

50-1118

Seasonal and inter-annual changes in planktonic biomass and community structure in eastern Antarctica using signature lipids.

Skerratt, J.H., Nichols, P.D., McMeekin, T.A., Burton, H., *Marine chemistry,* Oct. 1995, 51(2), p.93-113, 55 refs.

Marine biology, Oceanography, Sampling, Biomass, Ecosystems, Plankton, Suspended sediments, Water chemistry, Geochemistry, Antarctica—Davis Station

The total lipid, fatty acid, sterol and pigment composition of water column particulates collected near the Australian Davis Station were analyzed over five summer seasons (1988-93). Maximum lipid concentrations usually occurred in samples collected in Dec. and Jan. and corresponded with increased algal biomass. Polar lipids were the dominant lipid class. Both lipid profiles and microscopic observations showed significant variation in biomass and community structure in the water column both intra- and interannually. Very high polyunsaturated fatty acid and total lipid concentrations were measured during diatom blooms in the area. Bacterial markers increased in concentration after the summer algal blooms in each year. Samples collected from the fjords contained greater biomass and diversity in algal and bacterial markers than samples from coastal sites. Signature lipids for the prymnesiophyte *Phaeocystis* sp., thought to be seasonally abundant in antarctic waters, were identified in field samples over the five summer seasons studied. Based on the lipid profiles, the overall abundance of *Phaeocystis* sp. throughout the five summer seasons was sporadic and in most summers the abundance was low; these findings suggest *Phaeocystis* sp. is not always a major alga in this coastal region of Antarctica. (Auth. mod.)

50-1119

Morphodynamic evolution, self-organisation, and instability of coarse-clastic barriers on paraglacial coasts.

Forbes, D.L., Orford, J.D., Carter, R.W.G., Shaw, J., Jennings, S.C., *Marine geology,* Aug. 1995, 136(1-4), p.63-85, Refs. p.82-85.

Geomorphology, Beaches, Shore erosion, Classifications, Marine geology, Sea level, Water waves, Sedimentation, Glacial deposits, Sands, Gravel, Periodic variations

50-1120

Clay minerals as indicators of sources of terrigenous sediments, their transportation and deposition: Bering Basin, Russian-Alaskan Arctic.

Naidu, A.S., Han, M.W., Mowatt, T.C., Wajda, W., *Marine geology,* Sep. 1995, 127(1-4), p.87-104, 65 refs.

Oceanography, Marine geology, Marine deposits, Bottom sediment, Sedimentation, Ocean currents, Clay minerals, Distribution, Classifications, Drill core analysis, Bering Sea

50-1121

Little Ice Age temperature estimated by growth and flowering differences between subfossil and extant shoots of *Cassiope tetragona*, an arctic heather.

Havström, M., Callaghan, T.V., Jonasson, S., Svoboda, J., *Functional ecology,* Aug. 1995, 9(4), p.650-654, 12 refs.

Climatology, Climatic changes, Air temperature, Plant ecology, Phenology, Fossils, Snow cover effect, Periglacial processes, Glacial deposits, Growth, Correlation, Canada—Northwest Territories—Ellesmere Island

50-1122

Last glacial/interglacial record of rodent remains from Gigny karst sequence in the French Jura used for palaeoclimatic and palaeoecological reconstructions.

Chaline, J., Brunet-Lecomte, P., Campy, M., *Palaeogeography, palaeoclimatology, palaeoecology,* Sep. 1995, 117(3-4), p.229-252, 36 refs.

Geochronology, Paleoclimatology, Paleoecology, Sediments, Karst, Caves, Stratigraphy, Classifications, Glacier oscillation, Statistical analysis, France—Jura Mountains

50-1123

Snow in the cities—a history of America's urban response.

McKelvey, B., Rochester, University of Rochester Press, 1995, 202p., 70 refs.

Snowstorms, Snow removal, Snow removal equipment, Snow disposal, Ice control, Municipal engineering, Urban planning, Logistics, Environmental impact, History

50-1124

Ice conditions in the Greenland waters, 1962.

[Isforholdene i de grønlandske farvande], *Danske meteorologiske institut. Publikationer. Årbøger,* 1968, 25p. + charts, 3 refs.

Ice surveys, Sea ice distribution, Ice conditions, Greenland

50-1125

Ice conditions in the Greenland waters, 1963.

[Isforholdene i de grønlandske farvande], *Danske meteorologiske institut. Publikationer. Årbøger,* 1970, 24p. + charts, N71-22518, 5 refs.

Ice surveys, Sea ice distribution, Ice conditions, Greenland

50-1126

Ice conditions in the Greenland waters, 1976.

[Isforholdene i de grønlandske farvande], *Danske meteorologiske institut. Publikationer. Årbøger,* 1982, 9p. + charts, In English and Danish.

Ice surveys, Sea ice distribution, Ice conditions, Greenland

50-1127

Ice conditions in the Greenland waters, 1977.

[Isforholdene i de grønlandske farvande], *Danske meteorologiske institut. Publikationer. Årbøger,* 1983, 11p. + charts, In English and Danish.

Ice surveys, Sea ice distribution, Ice conditions, Greenland

50-1128

Ice conditions in the Greenland waters, 1978.

[Isforholdene i de grønlandske farvande], *Danske meteorologiske institut. Publikationer. Årbøger,* 1985, 11p. + charts, In English and Danish.

Ice surveys, Sea ice distribution, Ice conditions, Greenland

50-1129

Ice conditions in the Greenland waters, 1979.

[Isforholdene i de grønlandske farvande], *Danske meteorologiske institut. Publikationer. Årbøger,* 1985, 11p. + charts, N87-14827, In English and Danish.

Ice surveys, Sea ice distribution, Ice conditions, Greenland

50-1130

Seasonal changes in photosystem II organisation and pigment composition in *Pinus sylvestris*.

Ottander, C., Campbell, D., Öquist, G., *Planta,* Aug. 1995, 197(1), p.176-183, 49 refs.

Trees (plants), Plants (botany), Plant physiology, Photosynthesis, Plant tissues, Chlorophylls, Cold stress, Frost resistance, Cold weather survival, Light effects, Seasonal variations

50-1131

Enantioselective breakdown of α-hexachlorocyclohexane in a small arctic lake and its watershed.

Falconer, R.L.M., Bidleman, T.F., Gregor, D.J., Semkin, R., Teixeira, C., *Environmental science & technology,* May 1995, 29(5), p.1297-1302, 24 refs.

Limnology, Microbiology, Watersheds, Aerosols, Water pollution, Degradation, Lake water, Streams, Snowmelt, Meltwater, Sampling, Chemical analysis, Environmental tests, Canada—Northwest Territories—Cornwallis Island

50-1132

Freezing and melting of mercury in porous glass.

Kumzerov, IU.A., Nabereznov, A.A., Vakhrushev, S.B., Savenko, B.N., *Physical review B,* Aug. 15, 1995, 52(7), p.4772-4774, 16 refs.

Cryogenics, Metals, Frozen liquids, Porous materials, Phase transformations, Neutron diffraction, Spectra, Temperature effects, Temperature measurement

50-1133

Assessing frost damage in compacted clay liners.

Benson, C.H., Chamberlain, E.J., Erickson, A.E., Wang, X.D., *Geotechnical testing journal,* Sep. 1995, 18(3), p.324-333, 27 refs.

Cold weather construction, Clay soils, Linings, Frost penetration, Frost action, Freeze thaw cycles, Damage, Permeability, Mechanical tests, Seepage, Boreholes, Soil compaction

50-1134

Disorder in ice Ih.

Nield, V.M., Li, J.C., Ross, D.K., Whitworth, R.W., *Physica scripta,* 1995, Vol.T57, Euroconference '94. Neutrons in Disordered Matter. Stockholm, Sweden, June 9-13, 1994. Proceedings, p.179-183, 20 refs.

Ice physics, Deuterium oxide ice, Neutron scattering, Ice crystal structure, Ice crystal optics, Molecular structure, Spectra

50-1135

Organization of the river and flood program in the National Weather Service.

Stallings, E.A., Wenzel, L.A., *Weather and forecasting,* Sep. 1995, 10(3), p.457-464, 27 refs.

Flood forecasting, Warning systems, Monitors, Snow hydrology, Snow surveys, River flow, Long range forecasting, Organizations

50-1136

Transfer of European coastal pollution to the Arctic: radioactive tracers.

Dahlgaard, H., *Marine pollution bulletin,* Jan.-Mar. 1995, 31(1-3), International Conference on Trace Metals in the Aquatic Environment, 3rd, Aarhus, Denmark, May 1994. Proceedings, p.3-7, 27 refs.

Oceanography, Water pollution, Sampling, Ocean currents, Water transport, Radioactivity, Fallout, Environmental tests, Correlation, Arctic Ocean, Greenland Sea, Russia—Kara Sea

50-1137

Carotenoid composition and down regulation of photosystem II in three conifer species during winter.

Adams, W.W., III, Demmig-Adams, B., *Physiologia plantarum,* Nov. 1994, 92(3), p.451-458, 33 refs.

Plant physiology, Acclimatization, Photosynthesis, Chlorophylls, Trees (plants), Cold stress, Plant tissues, Chemical analysis, Light effects

50-1138

Detection of heat-mass transfer regime transitions in the active layer using fractal geometric parameters.

Hinkel, K.M., Outcalt, S.I., *Cold regions science and technology,* Aug. 1995, 23(4), p.293-304, 28 refs.

Discontinuous permafrost, Soil physics, Active layer, Thermal regime, Permafrost heat balance, Soil temperature, Periodic variations, Phase transformations, Mass transfer, Soil water, Ion density (concentration), Statistical analysis, Fractals

50-1139

Measurements and prediction of wind-induced heat transfer through permeable cold-weather clothing.

Kind, R.J., Jenkins, J.M., Broughton, C.A., *Cold regions science and technology,* Aug. 1995, 23(4), p.305-316, 12 refs.

Clothing, Cold weather performance, Cold weather tests, Heat transfer coefficient, Heat loss, Permeability, Simulation, Wind tunnels, Wind factors, Design criteria

50-1140

Estimating soil temperatures and frost in the lake effect snowbelt region, Michigan, USA.

Isard, S.A., Schaetzl, R.J., *Cold regions science and technology,* Aug. 1995, 23(4), p.317-332, 66 refs.

Soil temperature, Soil physics, Lake effects, Soil freezing, Soil air interface, Temperature variations, Computerized simulation, Snow cover effect, Snowmelt, Seepage, Freezing indexes, Meteorological data, United States—Michigan

50-1141

Considerations in determining thermal diffusivity from temperature time series using finite difference methods.

Zhang, T., Osterkamp, T.E., *Cold regions science and technology*, Aug. 1995, 23(4), p.333-341, 13 refs.

Permafrost heat transfer, Active layer, Thermal regime, Thermal conductivity, Thermal diffusion, Frozen ground thermodynamics, Soil temperature, Profiles, Periodic variations, Mathematical models

50-1142

Crack nucleation in saline ice with interacting inhomogeneities.

Wu, M.S., Zhang, Y., *Cold regions science and technology*, Aug. 1995, 23(4), p.343-365, 29 refs.

Ice mechanics, Sea ice, Ice models, Crack propagation, Ice microstructure, Brines, Two dimensional nucleation, Anisotropy, Stress concentration, Mathematical models, Tensile properties

50-1143

Grain multiplication mechanism for the formation of transition zones in first year sea ice.

Wei, Y.C., Johnston, M., Dempsey, J.P., *Cold regions science and technology*, Aug. 1995, 23(4), p.367-375, 9 refs.

Sea ice, Ice physics, Ice microstructure, Dendritic ice, Classifications, Profiles, Ice water interface, Ice crystal growth, Orientation, Phase transformations, Supercooling

50-1144

Ice shedding from cables.

Druez, J., Louchez, S., McComber, P., *Cold regions science and technology*, Aug. 1995, 23(4), p.377-388, 20 refs.

Transmission lines, Power line icing, Ice solid interface, Ice mechanics, Ice loads, Ice air interface, Wind factors, Ice breaking, Ice melting, Ice sublimation, Simulation, Mechanical tests, Statistical analysis

50-1145

Method for continuous measurement of ice cover thickness.

Nordell, B., Westerström, G., *Cold regions science and technology*, Aug. 1995, 23(4), p.389-391, 4 refs.

Ice physics, Ice sheets, Ice cover thickness, Measurement, Floating ice, Ice water interface, Ice formation, Ice volume, Thermal expansion, Fluid dynamics, Laboratory techniques

50-1146

Second-order dynamic model for the frost hardiness of trees.

Leinonen, I., Repo, T., Hänninen, H., Burr, K.E., *Annals of botany*, July 1995, 76(1), p.89-95, 42 refs.

Plants (botany), Forestry, Trees (plants), Plant ecology, Acclimatization, Cold tolerance, Frost resistance, Mathematical models, Temperature effects, Temperature control

50-1147

Variations of atmospheric methane supply from the Sea of Okhotsk induced by the seasonal ice cover.

Lammers, S., Suess, E., Mansurov, M.N., Anikiev, V.V., *Global biogeochemical cycles*, Sep. 1995, 9(3), p.351-358, 27 refs.

Climatology, Oceanography, Geochemical cycles, Water chemistry, Sampling, Natural gas, Atmospheric composition, Air water interactions, Sea ice distribution, Seasonal variations, Ice water interface, Ice cover effect, Vapor transfer, Okhotsk Sea

50-1148

Ice age terrestrial carbon changes revisited.

Crowley, T.J., *Global biogeochemical cycles*, Sep. 1995, 9(3), p.377-389, 61 refs.

Paleoclimatology, Ice age theory, Geochemical cycles, Mass transfer, Sedimentation, Pleistocene, Palynology, Paleoecology, Vegetation patterns, Statistical analysis, Periodic variations

50-1149

High-resolution Holocene and late glacial atmospheric CO_2 record: variability tied to changes in thermohaline circulation.

Figge, R.A., White, J.W.C., *Global biogeochemical cycles*, Sep. 1995, 9(3), p.391-403, 53 refs.

Paleoclimatology, Carbon dioxide, Geochemical cycles, Atmospheric composition, Ocean currents, Climatic changes, Peat, Isotope analysis, Ice cores, Correlation, —Tierra del Fuego

Results are presented from a new method for detecting changes in atmospheric CO_2 based on $\delta^{13}C$ analyses of selected peat components from a peat core in southern South America. The paleo-CO_2 record has decadal resolution spanning the last 14,000 radiocarbon years and compares well with antarctic ice core CO_2 data. Sharp peaks in CO_2 are detected during the late glacial, specifically at 10,200, 11,600 and 12,900 years BP. When compared to two deep-sea records interpreted to reflect changes in thermohaline circulation, these CO_2 pulses appear to relate to degassing events of the ocean associated with reinitiation of the thermohaline circulation occurring at this time. Two broad Holocene CO_2 excursions are also identified with peaks at 4,200 and 7,700 years BP. The driving mechanisms behind these excursions appear to be different from those in the late glacial. (Auth. mod.)

50-1150

Making an ice core.

Kopaska-Merkel, D.C., *Journal of geological education*, May 1995, 43(3), p.227-229, 7 refs.

Education, Climatology, Glaciology, Experimentation, Ice cores, Glacier ice, Stratigraphy, Simulation, Laboratory techniques

50-1151

Polar cap aurorae tell the time.

Egeland, A., Fukui, K., *Endeavour*, 1995, 19(3), p.107-111, 4 refs.

Atmospheric physics, Atmospheric electricity, Orientation, Geomagnetism, Optical phenomena, Periodic variations, Solar radiation

50-1152

Development of a field method for quantifying ammonium picrate and picric acid in soil and water.

Thorne, P.G., Jenkins, T.F., SR 95-20, *U.S. Army Cold Regions Research and Engineering Laboratory. Special report*, Aug. 1995, 22p., ADA-300 235, 36 refs.

Soil pollution, Water pollution, Military operation, Ions

Methods for the detection and quantification of ammonium picrate and picric acid in soil and water were developed. Picrate ions were extracted from water directly or from acetone extracts of soil by solid-phase, acidic, ion-exchange materials. Elution from the ion exchangers was accomplished by converting the retained picrate to picric acid using strong aqueous, acid-organic solvent mixtures. The resulting colorless solution was then converted back to a colored picrate solution by dilution with water. Quantification and correction for background interferences were based on spectrophotometric measurements. A colorimetric, chemical confirmation of picrate was possible for the water method. The method detection thresholds were determined to be 1.3 µg/g for soil and 3.6 µg/L for water. Both methods can be implemented under field conditions.

50-1153

Snow disposal study for the designated growth centres.

McNeely Engineering Consultants Ltd., Ottawa, Ontario, Ottawa, Ontario, Regional Municipality of Ottawa-Carleton Transportation Department, Jan. 1990, Var. p. (3 vols.), Vol.I contains the main report. Vols. III-1 and III-2 contain appendices. Refs. passim.

Snow disposal, Snowmelt, Water pollution, Environmental impact, Urban planning, Regional planning, Site surveys, Canada—Ontario—Ottawa

50-1154

Suction measurements on compacted till specimens and indirect filter paper calibration technique.

Fredlund, D.G., Gan, J.K.M., Gallen, P., *Transportation research record*, 1995, No.1481, p.3-9, 14 refs.

Glacial till, Glacial deposits, Soil water migration, Soil compaction, Soil strength, Soil trafficability, Soil tests, Permeability

50-1155

Case study of insulated pavement in Jackman, Maine.

Kestler, M.A., Berg, R.L., MP 3711, *Transportation research record*, 1995, No.1481, p.47-55, 10 refs.

Runways, Pavements, Subgrade soils, Frost penetration, Frost resistance, Frost protection, Thermal insulation, Subgrade maintenance, United States—Maine

Traditionally, detrimental effects of frost action are reduced by thick fills or by excavation and removal of large quantities of frost-susceptible material and replacement with a thick layer of non-frost-susceptible material. However, incorporating an insulating layer within the pavement structure can often provide a cost-effective alternative for protecting the subgrade from frost penetration. In 1986 the runway, taxiway, and parking apron at Newton Field, a small airport in Jackman, ME, were reconstructed using a layer of extruded polystyrene insulation 51 mm (2 in.) thick as part of the pavement structure. Because test results from the first winter of observation showed substantial frost penetration beneath the runway insulation, four additional test sections of various combinations of insulation and sand subbase thickness were constructed adjacent to the parking apron in 1987. The insulated test sections, which were constructed under tighter controls on a firm working platform and in a slightly drier location than the runway, experienced very little frost penetration into the subgrade. The good performance of the insulated test sections as well as runway observations, methods used to investigate insulation integrity, and theories considered to explain the relatively poor performance of some sections of the insulated runway pavement are discussed.

50-1156

Long-term evaluations of insulated roads and airfields in Alaska.

Esch, D.C., *Transportation research record*, 1995, No.1481, p.56-62, 9 refs.

Runways, Pavements, Embankments, Permafrost beneath roads, Frost resistance, Frost protection, Thermal insulation, Road maintenance, United States—Alaska

50-1157

Use of alternative materials in pavement frost protection: material characteristics and performance modeling.

Doré, G., Konrad, J.M., Roy, M., Rioux, N., *Transportation research record*, 1995, No.1481, p.63-74, 15 refs.

Pavements, Frost action, Frost resistance, Frost protection, Thermal insulation, Road maintenance, Canada—Quebec

50-1158

Durability of high strength concretes. [Korkealujuusbetonien säilyvyys]

Kukko, H., Tattari, K., *Finland. Technical Research Centre. VTT publications (Valtion teknillinen tutkimuskeskus. VTT julkaisuja)*. 1995, No.808, 33p. + appends., In Finnish with English summary. 7 refs.

Concrete freezing, Concrete strength, Concrete durability, Concrete admixtures, Frost resistance, Frost protection, Freeze thaw tests, Finland

50-1159

Arctic oceanography: marginal ice zones and continental shelves.

Smith, W.O., Jr., ed, Grebmeier, J.M., ed, Coastal and estuarine studies, Vol.49, Washington, D.C., American Geophysical Union, 1995, 387p., Refs. passim. For individual papers see 50-1160 through 50-1167.

DLC GC401.A755 1995

Ice edge, Ice cover effect, Ice water interface, Air ice water interaction, Air water interactions, Oceanographic surveys, Ocean currents, Water transport, Polar atmospheres, Marine atmospheres, Atmospheric circulation, Global change

50-1160

Satellite remote sensing of the Arctic Ocean and adjacent seas.

Comiso, J.C., Arctic oceanography: marginal ice zones and continental shelves. Edited by W.O. Smith, Jr. and J.M. Grebmeier, Washington, D.C., American Geophysical Union, 1995, p.1-50, Refs. p.44-50.

Oceanographic surveys, Ice surveys, Sea ice distribution, Ice conditions, Ice cover effect, Ice edge, Ice water interface, Ice temperature, Surface temperature, Radio echo soundings, Radiometry, Synthetic aperture radar, Spaceborne photography

50-1161

Atmosphere-ocean interactions in the marginal ice zones of the Nordic seas.

Guest, P.S., Davidson, K.L., Overland, J.E., Frederickson, P.A., Arctic oceanography: marginal ice zones and continental shelves. Edited by W.O. Smith, Jr. and J.M. Grebmeier, Washington, D.C., American Geophysical Union, 1995, p.51-95, Refs. p.90-95.

Polar atmospheres, Marine atmospheres, Marine meteorology, Atmospheric circulation, Atmospheric disturbances, Atmospheric boundary layer, Air water interactions, Air ice water interaction, Ice edge, Ice cover effect, Heat flux

50-1162

Small-scale physical processes in the Arctic Ocean.

Padman, L., Arctic oceanography: marginal ice zones and continental shelves. Edited by W.O. Smith, Jr. and J.M. Grebmeier, Washington, D.C., American Geophysical Union, 1995, p.97-129, Refs. p.124-129.

Polar atmospheres, Marine atmospheres, Atmospheric circulation, Ocean currents, Water transport, Air ice water interaction, Ice edge, Ice cover effect, Radiation balance, Global change, Arctic Ocean

50-1163

New insights on large-scale oceanography in Fram Strait: the West Spitsbergen Current.

Gascard, J.C., Richez, C., Rouault, C., Arctic oceanography: marginal ice zones and continental shelves. Edited by W.O. Smith, Jr. and J.M. Grebmeier, Washington, D.C., American Geophysical Union, 1995, p.131-182, 23 refs.

Oceanographic surveys, Ocean currents, Water transport, Water temperature, Salinity, Sea ice distribution, Ice edge, Ice cover effect, Ice water interface, Drift, Fram Strait

50-1164

Chemical oceanography of the Arctic and its shelf seas.

Anderson, L.G., Arctic oceanography: marginal ice zones and continental shelves. Edited by W.O. Smith, Jr. and J.M. Grebmeier, Washington, D.C., American Geophysical Union, 1995, p.183-202, 48 refs.

Oceanographic surveys, Ocean currents, Water transport, Sea water, Water chemistry, Salinity, Nutrient cycle, Geochemical cycles, Ice edge, Ice water interface, Ice cover effect

50-1165

DOC storage in arctic seas: the role of continental shelves.

Walsh, J.J., Arctic oceanography: marginal ice zones and continental shelves. Edited by W.O. Smith, Jr. and J.M. Grebmeier, Washington, D.C., American Geophysical Union, 1995, p.203-230, Refs. p.225-230.

Oceanographic surveys, Ocean currents, Water transport, Sea water, Water chemistry, Carbon dioxide, Marine biology, Biomass, Nutrient cycle, Geochemical cycles, Air water interactions, Ice edge, Ice cover effect, Bering Sea, Chukchi Sea

50-1166

Biological processes on arctic continental shelves: ice-ocean-biotic interactions.

Grebmeier, J.M., Smith, W.O., Jr., Conover, R.J., Arctic oceanography: marginal ice zones and continental shelves. Edited by W.O. Smith, Jr. and J.M. Grebmeier, Washington, D.C., American Geophysical Union, 1995, p.231-261, Refs. p.256-261.

Oceanographic surveys, Ocean currents, Water transport, Marine biology, Ecosystems, Biomass, Nutrient cycle, Ice water interface, Ice edge, Ice cover effect

50-1167

Resolved: the Arctic controls global climate change.

Alley, R.B., Arctic oceanography: marginal ice zones and continental shelves. Edited by W.O. Smith, Jr. and J.M. Grebmeier, Washington, D.C., American Geophysical Union, 1995, p.263-283, Refs. p.279-283.

Polar atmospheres, Atmospheric circulation, Ocean currents, Water transport, Air water interactions, Air ice water interaction, Ice age theory, Paleoclimatology, Global change

50-1168

Climate and ice-snow cover. [Qihou yu bingxue fugai]

Peng, G.B., Li, Q., Qian, B.D., Beijing, Qixiang chubanshe (Meteorology Press), 1992, 349p., In Chinese with English table of contents. Numerous refs. passim.

DLC QC926.32.P46 1992 Orien China

Sea ice distribution, Snow cover distribution, Ice sheets, Ice cover effect, Snow cover effect, Ice air interface, Snow air interface, Air ice water interaction, Glacial meteorology, Heat balance, Atmospheric circulation, Global change, Mathematical models

A general discussion is presented of the effects of sea ice, ice sheets, and snow on climate and of climate on ice and snow covers, mainly global, but with particular examples pertinent to the Antarctic, Arctic, and China and the relationship between them. The book is divided into six chapters: the global distribution of ice and snow covers: the effect of ice and snow covers on atmospheric circulation; the effect of atmospheric circulation on ice and snow covers; numerical modeling of ice-atmosphere processes; general circulation models; and ice and snow covers in weather forecasting. There is an English table of contents and each chapter contains numerous references in English, Chinese, and Russian.

50-1169

Hydrogeology and engineering geology of permafrost zones. [Duonian dongtuqu shuiwen dizhi ji gongcheng dizhixue]

Yang, R.T., Lin, F.T., Harbin, Dongbei linye daxue chubanshe (Northeast Forestry University Press), 1986, 397p., In Chinese. 35 refs.

DLC GB648.7.Y36 1986 Orien China

Permafrost distribution, Permafrost hydrology, Subpermafrost ground water, Suprapermafrost ground water, Permafrost beneath structures, Permafrost beneath roads, Hydrogeology, Land development, Engineering geology, China

50-1170

On the snowfall at Aomori City due to orographic convergent winds.

Rikiishi, K., Hayashi, T., *Seppyo*, Sep. 1995, 57(3), p.221-228, In Japanese with English summary. 7 refs.

Snowfall, Snowstorms, Topographic effects, Wind factors, Japan

50-1171

Measurement of falling velocity of rimed snowflakes.

Ishizaka, M., *Seppyo*, Sep. 1995, 57(3), p.229-238, In Japanese with English summary. 16 refs.

Falling snow, Snowflakes, Snow crystal growth, Snow air interface, Ice crystal adhesion, Coalescence

50-1172

Heat balance study of melting coefficient.

Yamazaki, T., *Seppyo*, Sep. 1995, 57(3), p.239-244, In Japanese. 16 refs.

Snow melting, Snowmelt, Snow heat flux, Snow air interface, Air temperature, Insolation, Albedo, Mathematical models

50-1173

Characteristics of dynamics and ablation of glaciers in Patagonia.

Naruse, R., *Seppyo*, Sep. 1995, 57(3), p.245-256, In Japanese. 46 refs.

Glacier surveys, Mountain glaciers, Glacier oscillation, Glacier heat balance, Glacier flow, Glacier ablation, Glacial meteorology, Patagonia

50-1174

Recent glacier fluctuations in the Himalaya and Karakorum.

Yamada, T., Shiraiwa, T., *Seppyo*, Sep. 1995, 57(3), p.257-267, In Japanese. 32 refs.

Mountain glaciers, Glacier surveys, Glacier oscillation, Glacier mass balance, Glacier surges, Glacial meteorology, Climatic changes, Himalaya Mountains, Karakoram Mountains

50-1175

Recent studies on snow and ice using microwave remote sensing—glaciers and ice sheet studies by SAR interferometry.

Nishio, F., *Seppyo*, Sep. 1995, 57(3), p.269-271, In Japanese. 15 refs.

Glacier surveys, Ice sheets, Glacier thickness, Glacier surfaces, Snow ice interface, Radio echo soundings, Topographic surveys, Radiometry, Synthetic aperture radar, Spaceborne photography

The use of satellite microwave SAR for interferometry of ice sheets in Antarctica and Greenland is briefly reviewed. Fifteen references are cited of which one is in Japanese and the rest are in English. Six of the references, all in English, are explicitly pertinent to Antarctica and others are implied. It is suggested that future research may use interferometric SAR data to model fluctuations and flow of ice sheets.

50-1176

Ice thermal storage-type air conditioning systems as seen in the patents. [Tokkyo kara mita kori chikunetsu-shiki kucho shisutemu]

Igarashi, S., Kawashima, M., *Seppyo*, Sep. 1995, 57(3), p.284-290, In Japanese. 3 refs.

Ice thermal properties, Ice makers, Ice refrigeration, Air conditioning

50-1177

Study of cryostructuration of polymer systems. XI. The formation of PVA cryogels by freezing-thawing the polymer aqueous solutions containing additives of some polyols.

Lozinskiĭ, V.I., Solodova, E.V., Zubov, A.L., Simenel, I.A., *Journal of applied polymer science*. Oct. 3, 1995, 58(1), p.171-177, 29 refs.

Polymers, Cryobiology, Porous materials, Solutions, Freeze thaw cycles, Freezing rate, Solubility, Liquid phases, Rheology, Shear modulus

50-1178

Low summer temperatures: a potential mortality factor for high arctic soil microarthropods?

Coulson, S.J., Hodkinson, I.D., Block, W., Webb, N.R., Worland, M.R., *Journal of insect physiology*, Sep. 1995, 41(9), p.783-792, 30 refs.

Soil microbiology, Arctic landscapes, Soil temperature, Ecology, Biomass, Sampling, Supercooling, Cold tolerance, Microclimatology, Temperature effects, Norway—Spitsbergen

50-1179

Correlation between the liquefaction strengths of saturated sands obtained by in-situ freezing method and rotary-type triple tube method.

Hatanaka, M., Uchida, A., Oh-oka, H., *Soils and foundations*, June 1995, 35(2), p.67-75, 12 refs.

Soil tests, Soil physics, Sands, Soil strength, Sampling, Soil freezing, Artificial freezing, Design criteria, Accuracy, Phase transformations

50-1180

Two methods for the determination of lateral stress in sand.

Hatanaka, M., Suzuki, Y., *Soils and foundations*, June 1995, 35(2), p.77-84, 7 refs.

Soil tests, Sampling, Noncohesive soils, Sands, Soil strength, Stress concentration, Soil pressure, Freeze thaw cycles, Artificial freezing, Soil freezing, Soil mechanics, Accuracy

50-1181

Mid stratospheric ozone minima in polar regions.

Austin, J., Hofmann, D.J., Butchart, N., Oltmans, S.J., *Geophysical research letters*, Sep. 15, 1995, 22(18), p.2489-2492, 11 refs.

Polar atmospheres, Climatology, Stratosphere, Atmospheric attenuation, Ozone, Periodic variations, Profiles, Models

Recent springtime measurements of ozone vertical profiles in polar regions have revealed local ozone depressions of about 25% at altitudes near 30 km. Similar features are also identified in three-dimensional photochemical model results. The modeled ozone depressions are local and temporary, often associated with stratospheric warming events which transport air from low latitudes, altering its photochemical history. The feature may be a component of the climatology of the region, but occurs less frequently in the model, possibly because of the long-standing problem of the underprediction of upper stratospheric ozone. Both arctic and antarctic data are presented. (Auth. mod.)

50-1182

Recovery of ozone in the lower stratosphere at the South Pole during the spring of 1994.

Hofmann, D.J., Oltmans, S.J., Johnson, B.J., Lathrop, J.A., Harris, J.M., Vömel, H., *Geophysical research letters*, Sep. 15, 1995, 22(18), p.2493-2496, 15 refs.

Polar atmospheres, Climatology, Stratosphere, Atmospheric composition, Atmospheric attenuation, Ozone, Sounding, Profiles, Seasonal variations, Antarctica—Amundsen-Scott Station

During 1994, springtime antarctic ozone measured at the south pole did not reach the record lows recorded during the 1993 ozone hole period when a value of 91±5 DU was observed. A low of 102 DU was recorded on Oct. 5, 1994, but such values were not sustained as in 1993. The recovery of total ozone in 1994 was mainly the result of moderation of ozone destruction in the 10-14 km region, probably related to diminishing stratospheric aerosol from the Pinatubo eruption, and may have also been related to disturbance of the vortex earlier than normal. As in 1993, ozone profiles at the minimum showed nearly complete destruction of ozone between 15 and 20 km in 1994. In this region, the rate of decline of ozone in September was as fast or somewhat faster than in 1992 and 1993 indicating continuing saturation of the ozone destroying chemistry, which is expected as stratospheric chlorine amounts continue to rise. As in 1993, ozone was again observed to be reduced in the 22-24 km region, suggesting that the ozone hole has now probably extended to a region unaffected prior to 1992. (Auth. mod.)

50-1183

Temporal development of Mt. Pinatubo aerosols as observed by lidar and sun photometer at Ny-Ålesund, Spitsbergen.

Beyerle, G., Herber, A., Neuber, R., Gernandt, H., *Geophysical research letters*, Sep. 15, 1995, 22(18), p.2497-2500, 17 refs.

Polar atmospheres, Atmospheric composition, Aerosols, Stratosphere, Optical properties, Volcanic ash, Photometry, Atmospheric density, Periodic variations, Norway—Spitsbergen

50-1184

Anomalous nitrate concentrations in polar ice cores—do they result from solar particle injections into the polar atmosphere.

Zeller, E.J., Dreschhoff, G.A.M., *Geophysical research letters*, Sep. 15, 1995, 22(18), p.2521-2524, 31 refs.

Polar atmospheres, Ionization, Solar radiation, Protons, Radio waves, Ice sheets, Ice cores, Sampling, Chemical composition, Periodic variations, Ice dating, Greenland—Summit

50-1185

Present-day post-glacial sea level change far from the Late Pleistocene ice sheets: implications for recent analyses of tide gauge records.

Mitrovica, J.X., Davis, J.L., *Geophysical research letters*, Sep. 15, 1995, 22(18), p.2529-2532, 6 refs.

Sea level, Marine geology, Subsidence, Glacial geology, Tides, Isostasy, Periodic variations

50-1186

High precision ^{230}Th and ^{232}Th in the Norwegian Sea and Denmark by thermal ionization mass spectrometry.

Moran, S.B., Hoff, J.A., Buesseler, K.O., Edwards, R.L., *Geophysical research letters*, Oct. 1, 1995, 22(19), p.2589-2592, 24 refs.

Oceanography, Sea water, Radioactive isotopes, Sampling, Spectroscopy, Ocean currents, Advection, Hydrography, Profiles, Norwegian Sea

50-1187

Artifact peroxides produced during cryogenic sampling of ambient air.

Staffelbach, T., Neftel, A., Dasgupta, P.K., *Geophysical research letters*, Oct. 1, 1995, 22(19), p.2605-2608, 24 refs.

Atmospheric composition, Sampling, Photochemical reactions, Cryogenics, Low temperature tests, Accuracy, Chemical analysis

50-1188

Complex refractive indices in the infrared of nitric acid trihydrate aerosols.

Richwine, L.J., Clapp, M.L., Miller, R.E., Worsnop, D.R., *Geophysical research letters*, Oct. 1, 1995, 22(19), p.2625-2628, 21 refs.

Polar stratospheric clouds, Optical properties, Infrared radiation, Aerosols, Hydrates, Spectra, Homogeneous nucleation, Light transmission, Refractivity, Simulation

In experiments which simulate chemical reactions within polar stratospheric clouds, the refractive indices of nitric acid trihydrate (NAT) have been determined from the infrared spectra of laboratory generated aerosols. The aerosols are formed through homogeneous nucleation in a flow cell with separate regions for nucleation and observation, allowing for independent control of the temperature conditions in these regions. A spectrum of small, non-scattering particles is recorded to determine the frequency-dependent imaginary refractive index, within a scaling factor. A subtractive Kramers-Kronig routine is then used to calculate the real index. The scaling factor for the imaginary indices is determined by fitting a spectrum associated with larger, scattering particles, which depends on both the real and imaginary portions of the refractive indices. The complex refractive indices of NAT are reported over the range 700/cm to 4000/cm. (Auth. mod.)

50-1189

Missing chemistry of reactive nitrogen in the upper stratospheric polar winter.

Kawa, S.R., et al, *Geophysical research letters*, Oct. 1, 1995, 22(19), p.2629-2632, 15 refs.

Polar atmospheres, Stratosphere, Chemical composition, Heterogeneous nucleation, Ozone, Ion density (concentration), Sounding, Profiles, Simulation

50-1190

Contributions to antarctic research IV.

Elliot, D.H., ed, Blaisdell, G.L., ed, *American Geophysical Union. Antarctic research series*, 1995, 67(4), 216p., Refs. passim. For individual papers see E-53918 through E-53922, G-53923, G-53924, G-53926, F-53925, K-53917, L-53916 or 50-1191 through 50-1195.

DLC G845.C67 vol.67, no.4, 1995

Rocks, Mineralogy, Geochemistry, Cold weather construction, Stations, Aircraft landing areas, Snow (construction material), Logistics

This volume focuses primarily on the geomagnetic activity, mineralogy, and petrology in various parts of the Transantarctic Mountains, but includes as well the thermal, isotopic, and chemical features of Lake Vanda and Don Juan Pond. Additional foci are concerned with the construction and maintenance of snow runways in Antarctica, an experimental permanent runway near McMurdo Station, and the logistics involved with the delivery of fuel and construction materials for rebuilding Amundsen-Scott Station while continuing to service the needs of the ongoing science programs.

50-1191

Ice-core based, Late Holocene history for the Transantarctic Mountains, Antarctica.

Mayewski, P.A., et al, *American Geophysical Union. Antarctic research series*, 1995, 67(4), Contributions to antarctic research IV, p.33-45, 47 refs.

DLC G845.C67 vol.67, no.4, 1995

Ice cores, Geochronology, Geochemistry, Antarctica—Dominion Range, Antarctica—Newall Glacier

Ice core records developed from two shallow sites in the Transantarctic Mountains provide documentation of much of the Holocene paleoenvironmental history of this region. From the more southerly site, Dominion Range, a 7000-year long record reveals change in the influence of tropospheric transport to the region. At this site, milder conditions and increased tropospheric inflow prior to 1500 yr BP are characterized by increased seasalt (ss), terrestrial and marine biogenic inputs. Increased persistence and/or extent of polar stratospheric clouds accompanying generally cooler conditions characterize much of the period since 1500 yr BP. From the more northerly site, Newall Glacier, the dramatic influence of the retreat of grounded ice from McMurdo Sound dated at <6600 yr BP dominates much of the ice core record. This regional environmental change is documented by massive influxes to the core site of evaporitic salts from areas exposed during low lake level stands. During the past 150 yr, both Dominion Range and Newall Glacier appear to be experiencing an overall increase in the exposure of ice-free terrain. (Auth.)

50-1192

Antarctic airfields.

Mellor, M., MP 3712, *American Geophysical Union. Antarctic research series*, 1995, 67(4), Contributions to antarctic research IV, p.143-151, 7 refs.

DLC G845.C67 vol.67 no.4, 1995

Aircraft landing areas, Runways, Ice runways, Airports, Aircraft operations

Following a summary of recent U.S. air activities in Antarctica, aircraft runways are considered. Various airfield options from openfield landings to conventional paved runways are dealt with, the relevant factors being given in tables that cover (1) construction and maintenance and (2) operations. Bearing capacity, rutting resistance, surface roughness and runway dimensions are discussed. It is concluded that a system of hard-surface runways for conventional aircraft is technically feasible. (Auth.)

50-1193

Compacted snow runway technology on the Ross Ice Shelf near McMurdo, Antarctica.

Blaisdell, G.L., Klokov, V., Diemand, D., MP 3713, *American Geophysical Union. Antarctic research series*, 1995, 67(4), Contributions to antarctic research IV, p.153-173, 14 refs.

DLC G845.C67 vol.67, no.4, 1995

Aircraft landing areas, Snow compaction, Ice runways, Snow (construction material), Antarctica—McMurdo Station, Antarctica—Ross Ice Shelf

The United States Antarctic Program currently operates wheeled aircraft from an annual sea-ice runway at McMurdo until about Dec. 15 each year. After that time it is limited to use of a snow runway and specialized ski-wheel aircraft. On the Ross Ice Shelf near McMurdo, runway technology is being developed to support conventional heavy wheeled aircraft. The runway capitalizes on the natural characteristics of the location and uses only snow and ice as construction materials. The runway is located inside the transition zone between the accumulation and ablation regions on the ice shelf. The first runway developed uses a thin, permanent cap of snow over natural blue ice to level undulations in the underlying surface and to protect the ice from intense solar radiation during the peak of summer (to prevent subsurface meltpool formation). The snow cap was produced by compaction with a heavy roller during the warmest part of the year; the snow was then left to sinter and strengthen with falling temperatures. In early Feb., the runway was able to support wheeled operation of a fully loaded LC-130 Hercules. (Auth.)

50-1194

Glaciology of the McMurdo Ice Shelf in the area of air operations.

Klokov, V., Diemand, D., MP 3714, *American Geophysical Union. Antarctic research series*, 1995, 67(4), Contributions to antarctic research IV, p.175-195, 12 refs.

DLC G845.C67, vol.67, no.4, 1995

Glaciology, Ice shelves, Ice formation, Ice accretion, Antarctica—McMurdo Ice Shelf

Two experimental runways have been built on the McMurdo Ice Shelf at the Pegasus site, about 13 km south of McMurdo Station. One of these runways was constructed using compacted snow technology while the other has a temporarily exposed blue ice surface. Conditions here are such that the annual snowfall can be removed entirely, baring the blue ice of the shelf, or compacted in place to preserve its reflective protective cover and to provide a strong surface capable of supporting wheeled aircraft traffic. During the 1991-92 and 1992-93 austral summers, detailed glaciological studies were conducted on the McMurdo Ice Shelf to identify snow accumulation, stratigraphy and the summer melt behavior. On the basis of the data collected, a runway location midway between the Pegasus site and Williams field appears to be an excellent site for construction of a permanent compacted snow runway on a deep snow foundation. This runway would be similar to the one used by wheeled aircraft at Russia's Molodezhnaya Station. Such a runway in the McMurdo area, in conjunction with a blue ice runway at the Pegasus site, would provide for wheeled aircraft access throughout the austral summer. This would eliminate the need for annual construction of the sea ice runway and for continued maintenance of Williams Field. (Auth. mod.)

50-1195

Delivery of fuel and construction materials to Amundsen-Scott South Pole Station.

DenHartog, S.L., Blaisdell, G.L., MP 3715, *American Geophysical Union. Antarctic research series*, 1995, 67(4), Contributions to antarctic research IV, p.197-216, 14 refs. For another source see 48-1001 or 21G-49291.

Construction materials, Logistics, Materials, Runways, Motor vehicles, Cost analysis, Antarctica—Amundsen-Scott Station

Plans are underway to rebuild Amundsen-Scott Station while maintaining the current science and operational program. The new station will require the delivery of large amounts of construction materials. None of the existing delivery systems is expected to be capable, within a reasonable time period, of supporting both current operations and the transport needs for construction of a new station. The authors have analyzed several options for moving construction mate-

rials and fuel to South Pole station. Each option assumes that goods will be transported to the antarctic continent by ship. The options include (1) construction of a snow runway at the South Pole capable of supporting wheeled aircraft, (2) development of an inland blue ice runway that is capable of supporting heavy wheeled aircraft coupled with an over-snow haulage system to the pole, (3) over-snow vehicle haulage from McMurdo to the pole, and (4) vehicle haulage from a coastal station. The results of this study are probably best used as a starting point for any serious planning and budgeting for the development of a new South Pole station. (Auth. mod.)

50-1196

Snow disposal sites—the Regional Municipality of Ottawa-Carleton experience.

Becking, J.I., Ottawa, Ontario, Regional Municipality of Ottawa-Carleton Transportation Department, May 1986, n.p., Refs. passim. Presented to the Canadian Society for Civil Engineering.

Snow disposal, Snowmelt, Water pollution, Environmental impact, Urban planning, Regional planning, Site surveys, Canada—Ontario—Ottawa

50-1197

Investigation of proposed snow dump facility.

Gore & Storrie Limited, Ottawa, Ontario, Ottawa, Ontario, Regional Municipality of Ottawa-Carleton Transportation Department, Aug. 1983, 23p. + append., 13 refs.

Snow disposal, Snowmelt, Water pollution, Environmental impact, Urban planning, Regional planning, Site surveys, Canada—Ontario—Ottawa

50-1198

Ice hydraulic investigation for the snow disposal structure, Ottawa River. An addendum presenting the results of field monitoring of frazil ice.

McNeely Engineering Consultants Ltd., Ottawa, Ontario, Ottawa, Ontario, Regional Municipality of Ottawa-Carleton, Dec. 1982, n.p.

Snow disposal, River ice, Frazil ice, River flow, Canada—Ontario—Ottawa

50-1199

Ice hydraulic investigation for the snow disposal structure, Ottawa River.

McNeely Engineering Consultants Ltd., Ottawa, Ontario. Ottawa, Ontario, Regional Municipality of Ottawa-Carleton, Dec. 1981, 13p., 9 refs.

Snow disposal, River ice, Frazil ice, River flow, Environmental impact, Urban planning, Regional planning, Canada—Ontario—Ottawa

50-1200

Chaudiere Island proposed snow dumping facility: an environmental appraisal.

Lopez, K., Niblett, P.D., Ottawa, Ontario, Regional Municipality of Ottawa-Carleton Transportation Department, Dec. 1981, 35p. + appends., Refs. p.28-35.

Snow disposal, Snowmelt, Water pollution, Environmental impact, Urban planning, Regional planning, Site surveys, Canada—Ontario—Ottawa

50-1201

Report on the proposed snow dumping facilities, Ottawa River.

McNeely Engineering Consultants Ltd., Ottawa, Ontario, Ottawa, Ontario, Regional Municipality of Ottawa-Carleton Operations Division, July 1980, 63p. + appends., Refs. passim.

Snow disposal, Environmental impact, Urban planning, Regional planning, Cost analysis, Canada—Ontario—Ottawa

50-1202

Release of volatile halogenated organic compounds by unialgal cultures of polar macroalgae.

Laturnus, F., *Chemosphere*, Sep. 1995, 31(6), p.3387-3395, 36 refs.

Marine biology, Algae, Plant physiology, Aerosols, Hydrocarbons, Atmospheric composition, Ozone, Environmental impact, Air water interactions, Simulation

The release of volatile halogenated organic compounds (VHOC) by different cultivated arctic and antarctic brown, red and green macroalgae was monitored in laboratory experiments. Isolation and identification of VHOC was performed by a purge and trap technique and capillary gas chromatography with electron capture detection. By using a column with high stationary phase thickness, 11 compounds from bromomethane to diiodomethane were separated and their release rates determined. Of all compounds investigated, bromoform is released in highest quantities from all species studied. Significant linear correlations of bromoform with the halogenated methanes and ethanes investigated suggest an enzymic formation for each single compound. The results are discussed with relation to a possible influence of VHOC on atmospheric ozone depletion in the polar regions. (Auth. mod.)

50-1203

Summary report on the snow disposal study for Portland, Maine.

Woodard & Curran Inc., Consulting Engineers, Portland, ME, Portland, ME, Parks and Public Works Department, Aug. 1990, 15p. + appends.

Snow disposal, Snow impurities, Water pollution, Environmental impact, Urban planning, United States—Maine—Portland

50-1204

Radiation risk.

Buckley, R.G., Trodahl, H.J., *Nature*, July 5, 1990, 346(6279), p.24, 8 refs.

Ultraviolet radiation, Sea ice, Algae, Antarctica—Antarctic Peninsula, Antarctica—Palmer Station

It has been pointed out earlier that antarctic life forms have developed only minimal defences against increased ultraviolet radiation as the ozone hole over the continent has persisted and deepened in recent years and penetrated the UV transparent sea ice cover. In this brief essay, the authors report measurements showing an even larger seasonal variation in the UV than in the visible spectrum. Algae which are known to be sensitive to UV radiation are put at greater risk of underproducing in these areas and thus induce a strain on the food web in ice covered regions.

50-1205

Composition of deicer impregnated in aggregate for pavement.

Pattengill, M.G., Jones, M.A., *U.S. Patent Office. Patent*, Aug. 15, 1995, 7p., USP-5,441,760.

Concrete aggregates, Chemical ice prevention

50-1206

Behavior of crystals in kimberlite and ice under the action of shock waves.

Beloborodov, V.N., Isakov, A.L., Kramskov, N.P., Sher, E.N., *Journal of mining science*, July 1995, 31(2), p.109-113, Translated from Fiziko-tekhnicheskie problemy razrabotki poleznykh iskopaemykh. 6 refs.

Mining, Permafrost physics, Frozen ground physics, Ground ice, Vibration, Shock waves, Wave propagation, Damping, Explosion effects, Simulation

50-1207

Problems of metallogeny of the Arctic.

Dodin, D.A., Vishnevskiĭ, A.N., Gulin, S.A., Kavardin, G.I., *Russian geology and geophysics*, 1994, 35(9), p.66-75, Translated from Geologiia i geofizika. 27 refs.

Mineralogy, Metals, Distribution, Mining, Natural resources, Geological surveys

50-1208

Sedimentary palaeoclimatic indicators: what they are and what they tell us.

Parrish, J.T., Demko, T.M., Tanck, G.S., *Royal Society of London. Philosophical transactions. Series A. Physical sciences and engineering*, July 15, 1993, 344(1670), p.21-25, Includes discussion. 4 refs.

Paleoclimatology, Climatic changes, Sedimentation, Classifications, Marine deposits, Tectonics, Models

50-1209

Motion of a granular avalanche in a convex and concave curved chute: experiments and theoretical predictions.

Greve, R., Hutter, K., *Royal Society of London. Philosophical transactions. Series A. Physical sciences and engineering*, Mar. 15, 1993, 342(1666), p.573-600, 7 refs.

Avalanche mechanics, Avalanche modeling, Simulation, Mechanical tests, Internal friction, Fluid dynamics, Rheology, Topographic effects, Analysis (mathematics)

50-1210

Stratigraphy and geological structure of Quaternary cover in the Lower-Ob-Yamal Taz region, West Siberia.

Arkhipov, S.A., Levchuk, L.K., Shelkoplias, V.N., *Russian geology and geophysics*, 1994, 35(6), p.74-89, Translated from Geologiia i geofizika. 23 refs.

Pleistocene, Quaternary deposits, Geological surveys, Stratigraphy, Classifications, Marine deposits, Moraines, Glacial geology, Paleoecology, Russia—Siberia

50-1211

High performance fiber optic hydrophones in the arctic environment.

Yurek, A.M., Tveten, A.B., Dandridge, A., *SPIE—The International Society for Optical Engineering. Milestone series*, 1995, Vol.108, Selected papers on fiber optic sensors. Edited by R. Willsch et al, p.670-673, 2 refs.

DLC TA1815.S45

Underwater acoustics, Oceanography, Subglacial observations, Acoustic measurement, Electronic equipment, Sensors, Lasers, Light transmission, Data processing, Performance, Greenland

50-1212

Further ozone decline during the northern hemisphere winter-spring of 1994-1995 and the new record low ozone over Siberia.

Bojkov, R.D., Fioletov, V.E., Balis, D.S., Zerefos, C.S., Kadigrova, T.V., Shalamianskiĭ, A.M., *Geophysical research letters*, Oct. 15, 1995, 22(20), p.2729-2732, 17 refs.

Polar atmospheres, Climatology, Atmospheric attenuation, Ozone, Sounding, Seasonal variations, Stratosphere, Air temperature, Russia—Siberia

50-1213

Preliminary results from POAM II: stratospheric ozone at high northern latitudes.

Randall, C.E., et al, *Geophysical research letters*, Oct. 15, 1995, 22(20), p.2733-2736, 14 refs.

Polar atmospheres, Climatology, Stratosphere, Atmospheric density, Ozone, Sampling, Seasonal variations, Turbulent diffusion, Photochemical reactions

50-1214

Summer solstice solar radiation, the 100 kyr ice age cycle, and the next ice age.

Ledley, T.S., *Geophysical research letters*, Oct. 15, 1995, 22(20), p.2745-2748, 21 refs.

Ice age theory, Climatology, Climatology, Solar radiation, Glacier oscillation, Ice volume, Periodic variations, Statistical analysis

50-1215

Heuristic model for sea level rise due to the melting of small glaciers.

Wigley, T.M.L., Raper, S.C.B., *Geophysical research letters*, Oct. 15, 1995, 22(20), p.2749-2752, 11 refs.

Oceanography, Sea level, Global change, Glacial hydrology, Glacier melting, Meltwater, Mathematical models, Forecasting

50-1216

Wavelet analysis of Plio-Pleistocene climate indicators: a new view of periodicity evolution.

Bolton, E.W., Maasch, K.A., Lilly, J.M., *Geophysical research letters*, Oct. 15, 1995, 22(20), p.2753-2756, 17 refs.

Pleistocene, Paleoclimatology, Climatic changes, Periodic variations, Spectra, Marine deposits, Isotope analysis, Analysis (mathematics), Statistical analysis

50-1217

Calculated and measured air and soil freeze-thaw frequencies.

Baker, D.G., Ruschy, D.L., *Journal of applied meteorology*, Oct. 1995, 34(10), p.2197-2205, 19 refs.

Soil freezing, Climatology, Freeze thaw cycles, Forecasting, Soil air interface, Freezing indexes, Periodic variations, Air temperature, Correlation

50-1218

Estimation of the effect of operational seeding on rain amounts in Israel.

Nirel, R., Rosenfeld, D., *Journal of applied meteorology*, Oct. 1995, 34(10), p.2220-2229, 27 refs.

Precipitation (meteorology), Cloud seeding, Cloud physics, Weather modification, Forecasting, Statistical analysis, Israel

50-1219

Mode coupling in critical phenomena and supercooled liquids.

Kawasaki, K., *Transport theory and statistical physics*, July-Aug.-Oct. 1995, 24(6-8), p.755-779, 31 refs.

Liquid cooling, Supercooling, Mass transfer, Phase transformations, Molecular energy levels, Thermodynamics, Viscosity, Statistical analysis, Analysis (mathematics)

50-1220

Mode coupling theory of structural relaxations.

Götze, W., Sjögren, L., *Transport theory and statistical physics*, July-Aug.-Oct. 1995, 24(6-8), p.801-853, 36 refs.

Liquid cooling, Supercooling, Viscoelasticity, Thermodynamics, Hydrodynamics, Molecular energy levels, Temperature effects, Analysis (mathematics), Statistical analysis, Relaxation (mechanics), Phase transformations, Theories

50-1221

Dynamics of metastable states: mode-coupling theory and beyond.

Dufty, J.W., Schmitz, R., *Transport theory and statistical physics*, July-Aug.-Oct. 1995, 24(6-8), p.903-925, 21 refs.

Liquid cooling, Supercooling, Phase transformations, Molecular energy levels, Thermodynamics, Analysis (mathematics), Statistical analysis

50-1222

Depolarized light scattering spectroscopy of glass-forming liquids: experimental tests of MCT.

Cummins, H.Z., Li, G., Du, W.M., Hernandez, J., Tao, N.J., *Transport theory and statistical physics*, July-Aug.-Oct. 1995, 24(6-8), p.981-1016, 36 refs.

Liquid cooling, Supercooling, Phase transformations, Relaxation (mechanics), Spectroscopy, Light scattering, Spectra, Molecular energy levels

50-1223

Crystallisation and the glass transition in suspensions of hard colloidal spheres.

van Megen, W., *Transport theory and statistical physics*, July-Aug.-Oct. 1995, 24(6-8), p.1017-1051, 34 refs.

Liquid cooling, Supercooling, Colloids, Phase transformations, Homogeneous nucleation, Relaxation (mechanics), Thermodynamics, Analysis (mathematics)

50-1224

Quasielastic neutron scattering in glass forming viscous liquids.

Petry, W., Wuttke, J., *Transport theory and statistical physics*, July-Aug.-Oct. 1995, 24(6-8), p.1075-1095, 62 refs.

Liquid cooling, Supercooling, Neutron scattering, Phase transformations, Viscoelasticity, Spectroscopy, Temperature effects, Relaxation (mechanics), Statistical analysis

50-1225

Liquid-glass transition in a strong glassformer.

Torell, L.M., Börjesson, L., Sokolov, A.P., *Transport theory and statistical physics*, July-Aug.-Oct. 1995, 24(6-8), p.1097-1124, 60 refs.

Liquid cooling, Supercooling, Solutions, Phase transformations, Relaxation (mechanics), Spectroscopy, Neutron scattering, Spectra, Molecular energy levels, Statistical analysis

50-1226

Molecular dynamics investigations of slow relaxations in supercooled liquids.

Hansen, J.P., Yip, S., *Transport theory and statistical physics*, July-Aug.-Oct. 1995, 24(6-8), p.1149-1178, 76 refs.

Liquid cooling, Supercooling, Solutions, Molecular energy levels, Relaxation (mechanics), Phase transformations, Statistical analysis, Computerized simulation

50-1227

Testing mode-coupling theory for a supercooled binary Lennard-Jones mixture.

Kob, W., Andersen, H.C., *Transport theory and statistical physics*, July-Aug.-Oct. 1995, 24(6-8), p.1179-1198, 13 refs.

Liquid cooling, Supercooling, Solutions, Molecular energy levels, Relaxation (mechanics), Computerized simulation, Liquid phases, Statistical analysis, Spectra

50-1228

Numerical studies of Langevin equations for the dynamics of a dense hard sphere fluid.

Valls, O.T., Dasgupta, C., *Transport theory and statistical physics*, July-Aug.-Oct. 1995, 24(6-8), p.1199-1225, 48 refs.

Liquid cooling, Supercooling, Thermodynamics, Molecular energy levels, Relaxation (mechanics), Phase transformations, Mathematical models, Statistical analysis

50-1229

Monte Carlo simulation of the glass transition in polymer melts: an application of MCT.

Baschnagel, J., *Transport theory and statistical physics*, July-Aug.-Oct. 1995, 24(6-8), p.1249-1268, 36 refs.

Liquid cooling, Supercooling, Polymers, Phase transformations, Thermodynamics, Relaxation (mechanics), Mathematical models

50-1230

Variation of atmospheric ozone and NO_2 at Zhongshan Station, antarctic spring.

Wang, Y.J., *Antarctic research (Chinese edition)*, June 1995, 7(2), p.45-50, In Chinese with English summary. 13 refs.

Ozone, Atmospheric composition, Antarctica—Zhongshan Station

Using visible/UV differential absorption spectroscopy, the author observed atmospheric ozone and NO_2 contents at Zhongshan Station during the antarctic ozone hole in 1991. The results show that the ozone depletion occurs rapidly during the middle of Aug. and reaches a minimum value on Oct. 3, and after 4 days the ozone content quickly returns to normal values. The variations of atmospheric ozone and NO_2 content have a good positive correlation of up to 0.69. During the ozone hole, the content of NO_2 is always on a low level and the altitude of its layer is higher. It shows that the ozone depletion was not due to the catalytic loss process of odd nitrogen at Zhongshan Station. (Auth.)

50-1231

Ice conditions in the Greenland waters, 1957.

[Isforholdene i de grønlandske farvande], *Danske meteorologiske institut. Publikationer. Årbøger*, 1967, 27p. + charts, 3 refs.

Ice surveys, Sea ice distribution, Ice conditions, Greenland

50-1232

Ice conditions in the Greenland waters, 1958.

[Isforholdene i de grønlandske farvande], *Danske meteorologiske institut. Publikationer. Årbøger*, 1967, 32p. + charts, 3 refs.

Ice surveys, Sea ice distribution, Ice conditions, Greenland

50-1233

Ice conditions in the Greenland waters, 1959.

[Isforholdene i de grønlandske farvande], *Danske meteorologiske institut. Publikationer. Årbøger*, 1968, 31p. + charts, 3 refs.

Ice surveys, Sea ice distribution, Ice conditions, Greenland

50-1234

Ice conditions in the Greenland waters, 1960.

[Isforholdene i de grønlandske farvande], *Danske meteorologiske institut. Publikationer. Årbøger*, 1964, 33p. + charts.

Ice surveys, Sea ice distribution, Ice conditions, Greenland

50-1235

Ice conditions in the Greenland waters, 1961.

[Isforholdene i de grønlandske farvande], *Danske meteorologiske institut. Publikationer. Årbøger*, 1965, 33p. + charts, 4 refs.

Ice surveys, Sea ice distribution, Ice conditions, Greenland

50-1236

Ice conditions in the Greenland waters, 1964.

[Isforholdene i de grønlandske farvande], *Danske meteorologiske institut. Publikationer. Årbøger*, 1971, 25p. + charts, 7 refs.

Ice surveys, Sea ice distribution, Ice conditions, Greenland

50-1237

Pleistocene-Holocene fluxes are not the Earth's norm.

Hay, W.W., Studies in Geophysics. Material fluxes on the surface of the earth, Washington, D.C., National Academy Press, 1994, p.15-27, 62 refs.

DLC QE571.M37

Pleistocene, Quaternary deposits, Glacial deposits, Sediment transport, Sedimentation, Mass transfer, Erosion, Tectonics, Global change, Periodic variations

50-1238

Surficial weathering fluxes and their geochemical controls.

Lerman, A., Studies in Geophysics. Material fluxes on the surface of the earth, Washington, D.C., National Academy Press, 1994, p.28-45, 66 refs.

DLC QE571.M37

Geochemistry, Geochemical cycles, Sediment transport, Runoff, Weathering, Bedrock, Solubility, Surface waters, Climatic changes

50-1239

Global chemical weathering on glacial time scales.

Kump, L.R., Alley, R.B., Studies in Geophysics. Material fluxes on the surface of the earth, Washington, D.C., National Academy Press, 1994, p.46-60, 68 refs.

DLC QE571.M37

Glacial geology, Geologic processes, Global change, Climatic changes, Glacial erosion, Ice solid interface, Sediment transport, Weathering, Geochemical cycles

50-1240

Glacial to modern changes in global river fluxes.

Baker, V.R., Studies in Geophysics. Material fluxes on the surface of the earth, Washington, D.C., National Academy Press, 1994, p.86-98, Refs. p.95-98.

DLC QE571.M37

Pleistocene, River flow, Hydrology, Sediment transport, Global change, Flooding, Runoff

50-1241

Sediment fluxes along high-latitude glaciated continental margins: northeast Canada and eastern Greenland.

Andrews, J.T., Syvitski, J.P.M., Studies in Geophysics. Material fluxes on the surface of the earth, Washington, D.C., National Academy Press, 1994, p.99-115, 69 refs.

DLC QE571.M37

Sediment transport, Sedimentation, Oceanography, Bottom sediment, Shores, Glacial erosion, Glacial geology, Drill core analysis, Marine deposits, Geochemical cycles, Periodic variations, Canada, Greenland

50-1242

Late Quaternary flux of eolian dust to the pelagic ocean.

Rea, D.K., Hovan, S.A., Janecek, T.R., Studies in Geophysics. Material fluxes on the surface of the earth, Washington, D.C., National Academy Press, 1994, p.116-124, 43 refs.

DLC QE571.M37

Geologic processes, Sediment transport, Wind factors, Eolian soils, Quaternary deposits, Paleoclimatology, Bottom sediment, Marine deposits, Drill core analysis, Geochemical cycles, Periodic variations

50-1243

Experimental study of freezing of binary solutions.

Zampino, M.A., Waters, R.A., Chellaiah, S., National Heat Transfer Conference, 28th, Minneapolis, MN, July 28-31, 1991. Phase change heat transfer 1991. Edited by E. Hensel et al, New York, American Society of Mechanical Engineers, 1991, p.37-45, 10 refs. For another version see 47-2550.

DLC TJ260.P438

Frozen liquids, Solutions, Phase transformations, Freezing, Convection, Stratification, Thermal diffusion, Temperature distribution, Mass transfer, Salinity

50-1244

Potential for interpreting total and multiyear ice concentrations in SSMI/85.5 GHz imagery.

Lomax, A.S., Lubin, D., Whritner, R.H., *Remote sensing of environment*, Oct. 1995, 54(1), p.13-26, 25 refs.

Spaceborne photography, Remote sensing, Infrared photography, Ice surveys, Ice detection, Brightness, Classifications, Sea ice distribution, Sensor mapping, Image processing, Chukchi Sea, Beaufort Sea

50-1245

Boundary layer characteristics of the continental margin of the western Barents Sea.

Thomsen, L., Graf, G., *Oceanologica acta*, 1994, 17(6), p.597-607, With French summary. 54 refs.

Oceanography, Ocean bottom, Suspended sediments, Dispersions, Biomass, Classifications, Decomposition, Sampling, Boundary layer, Stratification, Hydrodynamics, Barents Sea

50-1246

Radar and radiation properties of ice clouds.

Atlas, D., Matrosov, S.Y., Heymsfield, A.J., Chou, M.D., Wolff, D.B., *Journal of applied meteorology*, Nov. 1995, 34(11), p.2329-2345, 47 refs.

Climatology, Cloud physics, Probes, Particle size distribution, Water content, Radar echoes, Refractivity, Ice crystal optics, Analysis (mathematics), Radiation balance

50-1247

Role of spaceborne millimeter-wave radar in the global monitoring of ice cloud.

Brown, P.R.A., Illingworth, A.J., Heymsfield, A.J., McFarquhar, G.M., Browning, K.A., Gosset, M., *Journal of applied meteorology*, Nov. 1995, 34(11), p.2346-2366, 44 refs.

Climatology, Radiation balance, Cloud cover, Cloud physics, Radar echoes, Remote sensing, Classifications, Ice crystal optics, Water content, Optical properties, Models

50-1248

Reexamination of the formation of exhaust condensation trails by jet aircraft.

Hanson, H.M., Hanson, D.M., *Journal of applied meteorology*, Nov. 1995, 34(11), p.2400-2405, 7 refs.

Condensation trails, Cloud physics, Vapor pressure, Altitude, Forecasting, Analysis (mathematics)

50-1249

Tests for persistent effects of cloud seeding in a recent Australian experiment.

Bigg, E.K., *Journal of applied meteorology*, Nov. 1995, 34(11), p.2406-2411, 10 refs.

Precipitation (meteorology), Weather modification, Cloud physics, Cloud seeding, Ice nuclei, Heterogeneous nucleation, Silver iodide, Statistical analysis, Australia

50-1250

Geochemical criterion for the recognition of Heinrich events and estimation of their depositional fluxes by the $(^{230}Th_{excess})_0$ profiling method.

Thomson, J., Higgs, N.C., Clayton, T., *Earth and planetary science letters*, Oct. 1995, 135(1-4), p.41-56, 38 refs.

Oceanography, Paleoclimatology, Marine deposits, Sampling, Geochemistry, Profiles, Pleistocene, Icebergs, Glacial deposits, Ice rafting, Radioactive age determination

50-1251

Ash layers from Iceland in the Greenland GRIP ice core correlated with oceanic and land sediments.

Grönvold, K., et al, *Earth and planetary science letters*, Oct. 1995, 135(1-4), p.149-155, 29 refs.

Paleoclimatology, Ice sheets, Ice cores, Sediments, Stratigraphy, Volcanic ash, Aerosols, Correlation, Radioactive age determination, Chemical analysis, Iceland, Greenland

50-1252

Lichens and rocks: a review.

Easton, R.M., *Geoscience Canada*, June 1994, 21(2), p.59-76, With French summary. Refs. p.72-76.

Geobotanical interpretation, Geological surveys, Rock properties, Lichens, Vegetation patterns, Ecology, Classifications, Geochronology

50-1253

Influence of stabilizers and freezing rate on the stress relaxation behaviour of freeze-concentrated sucrose solutions at different temperatures.

Sahagian, M.E., Goff, H.D., *Food hydrocolloids*, Sep. 1995, 9(3), p.181-188, 31 refs.

Colloids, Frozen liquids, Solutions, Phase transformations, Viscoelasticity, Relaxation (mechanics), Freezing rate, Temperature effects, Rheology, Thermal analysis, Stability

50-1254

Initiation of ice sheet growth, Milankovitch solar radiation variations, and the 100 ky ice age cycle.

Ledley, T.S., Chu, S.P., *Climate dynamics*, Sep. 1995, 11(7), p.439-445, 31 refs.

Ice age theory, Climatology, Hydrologic cycle, Heat balance, Insolation, Surface temperature, Land ice, Sea ice, Ice growth, Thermodynamics, Periodic variations, Simulation

50-1255

Precise cosmogenic ^{10}Be measurements in western North America: support for a global Younger Dryas cooling event.

Gosse, J.C., Evenson, E.B., Klein, J., Lawn, B., Middleton, R., *Geology*, Oct. 1995, 23(10), p.877-880, 31 refs.

Paleoclimatology, Climatic changes, Moraines, Glacial geology, Quaternary deposits, Radioactive age determination, Geochronology, Gamma irradiation, Correlation, United States—Wyoming—Wind River Mountains

50-1256

Determination of lead isotopic ratios in Greenland and antarctic snow and ice at picogram per gram concentrations.

Chisholm, W., Rosman, K.J.R., Boutron, C.F., Candelone, J.P., Hong, S., *Analytica chimica acta*, July 31, 1995, 311(2), p.141-151, 23 refs.

Air pollution, Ice sheets, Ice cores, Snow composition, Sampling, Microanalysis, Isotope analysis, Environmental tests, Profiles, Correlation, Accuracy, Greenland—Summit, Antarctica—Vostok Station

Ultra-clean procedures have been developed which allow the isotopic composition of picogram quantities of lead to be measured in snow and ice from Greenland and Antarctica. Ultra-clean collection, storage and processing techniques were used to analyze samples containing as little as ca. 2 pg Pb/g. The concentration and isotopic composition were measured simultaneously by isotope dilution mass spectrometry using a lead spike enriched in ^{205}Pb. Although the precision of the isotopic ratios improved with the size of the sample, a precision of ca. 0.2% could be achieved on a few tens of pg of Pb, enabling small differences in isotopic composition to be resolved in deep ice cores and surface snow. (Auth.)

50-1257

Ice conditions in the Greenland waters, 1966.

[Isforholdene i de grønlandske farvande], *Danske meteorologiske institut. Publikationer. Årbøger,* 1981, 11p. + charts, In English and Danish.

Ice surveys, Sea ice distribution, Ice conditions, Greenland

50-1258

Ice conditions in the Greenland waters, 1968.

[Isforholdene i de grønlandske farvande], *Danske meteorologiske institut. Publikationer. Årbøger,* 1983, 11p. + charts, In English and Danish.

Ice surveys, Sea ice distribution, Ice conditions, Greenland

50-1259

Ice conditions in the Greenland waters, 1974.

[Isforholdene i de grønlandske farvande], *Danske meteorologiske institut. Publikationer. Årbøger,* 1985, 11p. + charts, N86-29491, In English and Danish.

Ice surveys, Sea ice distribution, Ice conditions, Greenland

50-1260

Ice conditions in the Greenland waters, 1975.

[Isforholdene i de grønlandske farvande], *Danske meteorologiske institut. Publikationer. Årbøger,* 1982, 11p. + charts, N83-27566, In English and Danish.

Ice surveys, Sea ice distribution, Ice conditions, Greenland

50-1261

Integrated method of statistical processing and objective analysis of data from oceanographic field experiments. [Kompleks metodov statisticheskoĭ obrabotki i ob"ektivnogo analiza dannykh naturnykh okeanograficheskikh eksperimentov]

Golubev, V.A., Zuev, A.N., Lebedev, I.A., *St. Petersburg. Arkticheskiĭ i antarkticheskiĭ nauchno-issledovatel'skiĭ institut. Trudy,* 1992, Vol.426, p.7-18, In Russian. 10 refs.

Statistical analysis, Data processing, Oceanography, Computer programs, Barents Sea

50-1262

Eddy formation in the polar frontal zone of the Barents Sea. [O vikhreobrazovanii v poliarnoĭ frontal'noĭ zone Barentseva moria]

Kostianoĭ, A.G., Lebedev, I.A., Novikov, B.A., Rodionov, V.B., *St. Petersburg. Arkticheskiĭ i antarkticheskiĭ nauchno-issledovatel'skiĭ institut. Trudy,* 1992, Vol.426, p.19-32, In Russian. 22 refs.

Ocean currents, Oceanography, Surface temperature, Water temperature, Temperature distribution, Sea ice distribution, Barents Sea

50-1263

Geostrophic circulation of water in the vicinity of the meteorological vessel "M" in March-April 1987. [Geostroficheskaia tsirkuliatsiia vod v raĭone korablia pogody "M" v marte-aprele 1987 g.]

Korotkov, S.V., *St. Petersburg. Arkticheskiĭ i antarkticheskiĭ nauchno-issledovatel'skiĭ institut. Trudy,* 1992, Vol.426, p.33-38, In Russian. 8 refs.

Hydrology, Meteorology, Ocean currents, Water temperature, Iceland Sea, Norwegian Sea

50-1264

Mathematical model of synoptic variation in drifting ice cover due to atmospheric factors. [Matematicheskaia model' sinopticheskoĭ izmenchivosti dreĭfuiushchego ledianogo pokrova pod deĭstviem atmosfernykh faktorov]

Zuev, A.N., *St. Petersburg. Arkticheskiĭ i antarkticheskiĭ nauchno-issledovatel'skiĭ institut. Trudy,* 1992, Vol.426, p.39-53, In Russian. 4 refs.

Mathematical models, Sea ice, Drift, Ice cover, Synoptic meteorology, Hydrodynamics, Rheology

50-1265

Method of calculating the breakup of ice cover. [K metodike rascheta razdroblennosti ledianogo pokrova]

Khvedynich, S.V., *St. Petersburg. Arkticheskii i antarkticheskii nauchno-issledovatel'skii institut. Trudy,* 1992, Vol.426, p.54-64, In Russian. 8 refs.

Analysis (mathematics), Ice cover, Ice breakup, Ice conditions, Sea ice, Barents Sea

50-1266

Detailed morphometric characteristics of the Barents Sea. [Utochnennye morfometricheskie kharakteristiki Barentseva moria]

Dzheniuk, S.L., *St. Petersburg. Arkticheskii i antarkticheskii nauchno-issledovatel'skii institut. Trudy,* 1992, Vol.426, p.65-75, In Russian. 21 refs.

Oceanography, Ocean environments, Oceanographic surveys, Barents Sea

50-1267

Study of short term variability in oceanographic data with the aid of numerical filters. [Issledovanie korotkoperiodnoĭ izmenchivosti okeanograficheskikh dannykh s pomoshch'iu chislennykh fil'trov]

Potanin, V.A., Korotkov, S.V., IAkovlev, L.F., Gasumiants, L.G., *St. Petersburg. Arkticheskii i antarkticheskii nauchno-issledovatel'skii institut. Trudy,* 1992, Vol.426, p.76-81, In Russian. 6 refs.

Oceanography, Statistical analysis, Water temperature, Salinity, Temperature variations, Periodic variations, Barents Sea, Russia—Kola Bay

50-1268

Analyzing the accuracy of calculating the surface layer temperature of the Barents Sea from aerial infrared measurements. [Otsenka tochnosti rascheta temperatury poverkhnostnogo sloia Barentseva moria po dannym aviatsionnykh IK-izmerenii]

Garbuzov, A.V., *St. Petersburg. Arkticheskii i antarkticheskii nauchno-issledovatel'skii institut. Trudy,* 1992, Vol.426, p.82-88, In Russian. 5 refs.

Temperature measurement, Accuracy, Surface temperature, Water temperature, Sea water, Aerial surveys, Barents Sea

50-1269

Evaluating the inter-diurnal variation of hydrometeorological elements and forming the heat balance of the Barents Sea surface. [Otsenka mezhsutochnoĭ izmenchivosti gidrometeorologicheskikh elementov i sostavliaiushchikh teplovogo balansa poverkhnosti Barentseva moria]

Girdiuk, G.V., *St. Petersburg. Arkticheskii i antarkticheskii nauchno-issledovatel'skii institut. Trudy,* 1992, Vol.426, p.89-101, In Russian. 19 refs.

Diurnal variations, Hydrology, Meteorology, Heat balance, Surface properties, Barents Sea

50-1270

Inter-annual variation in the radiation and turbulent flow in the Barents, Norwegian and Greenland seas. [Mezhgodovaia izmenchivost' radiatsionnykh i turbulentnykh potokov v Barentsevom, Norvezhskom i Grenlandskom moriakh]

Girdiuk, G.V., *St. Petersburg. Arkticheskii i antarkticheskii nauchno-issledovatel'skii institut. Trudy,* 1992, Vol.426, p.102-118, In Russian. 19 refs.

Turbulent flow, Heat balance, Radiation balance, Analysis (mathematics), Seasonal variations, Barents Sea, Norwegian Sea, Greenland Sea

50-1271

Wind gusts in northern seas. [O poryvistosti vetra na severnykh moriakh]

Zykova, G.G., *St. Petersburg. Arkticheskii i antarkticheskii nauchno-issledovatel'skii institut. Trudy,* 1992, Vol.426, p.119-129, In Russian. 3 refs.

Wind factors, Wind velocity, Analysis (mathematics), Wind (meteorology), Norwegian Sea, Barents Sea, Greenland Sea

50-1272

Turbulent heat transfer in the atmosphere of the northern European basin. [Turbulentnyĭ teploperenos v atmosfere severo-evropeĭskogo basseĭna]

Martem'ianova, E.S., *St. Petersburg. Arkticheskii i antarkticheskii nauchno-issledovatel'skii institut. Trudy,* 1992, Vol.426, p.130-141, In Russian. 13 refs.

Atmospheric circulation, Turbulent exchange, Heat transfer, Air water interactions, Barents Sea

50-1273

Zonal and meridional components of atmospheric heat exchange in the northern European basin. [Zonal'naia i meridional'naia sostavliaiushchie atmosfernogo teploperenosa v severo-evropeĭskom basseĭne]

Martem'ianova, E.S., *St. Petersburg. Arkticheskii i antarkticheskii nauchno-issledovatel'skii institut. Trudy,* 1992, Vol.426, p.142-157, In Russian. 28 refs.

Heat transfer, Atmospheric composition, Advection, Atmospheric circulation, Stratosphere, Barents Sea, Greenland Sea

50-1274

Analyzing the parameters of clouds according to data from aerial soundings in the northern European basin. [Otsenka parametry oblakov po dannym aerologicheskogo zondirovaniia v Severo-Evropeĭskom basseĭne]

Garbuzov, A.V., Seniukova, L.P., *St. Petersburg. Arkticheskii i antarkticheskii nauchno-issledovatel'skii institut. Trudy,* 1992, Vol.426, p.158-167, In Russian. 9 refs.

Clouds (meteorology), Aerial surveys, Sounding, Cloud physics, Cloud cover

50-1275

Characteristics of the formation of the winter temperature-wind complex in the Kola Bay region. [Osobennosti formirovaniia zimnego temperaturno-vetrovogo kompleksa v raĭone Kol'skogo zaliva]

Zykova, G.G., *St. Petersburg. Arkticheskii i antarkticheskii nauchno-issledovatel'skii institut. Trudy,* 1992, Vol.426, p.168-179, In Russian. 1 ref.

Air temperature, Temperature variations, Temperature distribution, Wind direction, Wind factors, Wind velocity, Russia—Kola Bay, Russia—Murmansk, Russia—Kola Peninsula

50-1276

Structure of cyclic fluctuations and an analysis of the ultimate predictability of monthly precipitation totals on the Kola Peninsula. [Struktura tsiklicheskikh kolebaniĭ i otsenka predela predskazuemosti mesiachnoĭ summy osadkov na Kol'skom poluostrove]

Orlov, N.F., Mikulina, S.V., *St. Petersburg. Arkticheskii i antarkticheskii nauchno-issledovatel'skii institut. Trudy,* 1992, Vol.426, p.180-185, In Russian. 2 refs.

Precipitation (meteorology), Weather forecasting, Seasonal variations, Russia—Kola Peninsula

50-1277

Possibility of forecasting monthly precipitation totals on the Kola Peninsula. [Vozmozhnosti prognozirovaniia mesiachnoĭ summy osadkov na Kol'skom poluostrove]

Orlov, N.F., *St. Petersburg. Arkticheskii i antarkticheskii nauchno-issledovatel'skii institut. Trudy,* 1992, Vol.426, p.186-191, In Russian. 2 refs.

Precipitation (meteorology), Weather forecasting, Seasonal variations, Analysis (mathematics), Russia—Kola Peninsula

50-1278

Methods for a structural processing of meteorological information. [Metody strukturnoĭ obrabotki meteorologicheskoĭ informatsii]

Dranitsa, IU.P., *St. Petersburg. Arkticheskii i antarkticheskii nauchno-issledovatel'skii institut. Trudy,* 1992, Vol.426, p.192-206, In Russian. 8 refs.

Meteorology, Data processing, Analysis (mathematics)

50-1279

Diffuse interface analysis of ice nucleation in undercooled water.

Gránásy, L., *Journal of physical chemistry,* Sep. 21, 1995, 99(38), p.14182-14187, 26 refs.

Ice water interface, Ice physics, Ice formation, Heterogeneous nucleation, Nucleation rate, Water temperature, Interfacial tension, Molecular energy levels, Thermodynamic properties, Theories

50-1280

Molecular dynamics study of homogeneous nucleation in supercooled clusters of *tert*-butyl chloride. Transition from tetragonal to monoclinic phase.

Bartell, L.S., Chen, J., *Journal of physical chemistry,* Aug. 17, 1995, 99(33), p.12444-12449, 32 refs.

Solids, Supercooling, Homogeneous nucleation, Phase transformations, Molecular energy levels, Molecular structure, Simulation, Thermodynamic properties

50-1281

Summer abundance and activities of bacteria in the freshwater lakes of Schirmacher Oasis, Antarctic.

Ramaiah, N., *Polar biology,* Sep. 1995, 15(8), p.547-553, Refs. p.552-553.

Limnology, Ecosystems, Bacteria, Biomass, Soil microbiology, Lake ice, Glacier ice, Ice composition, Lacustrine deposits, Sampling, Antarctica—Schirmacher Ponds

Bacterial biomass and heterotrophic potential (using ^{14}C-labeled glucose, glutamic acid and sodium acetate) of water, ice and sediment microbial populations were studied from different lakes of the Schirmacher Ponds. Epifluorescence counts of total bacteria in these lakes were observed to be lower when compared to some of the ultra-oligotrophic antarctic lakes. Biovolumes of bacteria from different samples did not show significant variations, suggesting that regulatory factors were oligotrophy and low temperatures rather than microzoan grazing. Microbial uptake rates of glutamic acid were generally the fastest, followed by glucose and/or sodium acetate in the lakewater samples. Results of this study are potentially useful in recognizing the relative abundance and activity of limnetic microbial populations in the Schirmacher Ponds during summer—the active period of microbial growth—and for comparing their activities with other ecosystems elsewhere in continental Antarctica. (Auth. mod.)

50-1282

Planktonic communities of melt ponds on the McMurdo Ice Shelf, Antarctica.

James, M.R., Pridmore, R.D., Cummings, V.J., *Polar biology,* Sep. 1995, 15(8), p.555-567, Refs. p.566-567.

Marine biology, Limnology, Ice shelves, Lake ice, Meltwater, Ponds, Plankton, Ecosystems, Biomass, Classifications, Sampling, Antarctica—McMurdo Ice Shelf

The planktonic community of 20 melt ponds on the McMurdo Ice Shelf was investigated to determine taxa abundance and diversity and the controlling environmental variables. Grazing rates were measured using fluorescent beads to examine trophic interactions between ciliates, bacteria and phytoplankton. The melt ponds contained a surprisingly varied planktonic community with relatively high abundance compared with antarctic continental lakes. There was a clear distinction between small, productive ponds dominated by bactivorous small ciliates, hymenostomes and heterotrophic cryptophytes and the larger, less productive ponds where these taxa were less abundant. The benthic mats of cyanobacteria and diatoms were potentially a source of food for some ciliate species but the majority were bacterivores. The absence of large herbivorous ciliates, the heterotrophic capabilities of cryptophytes and the broad ecological tolerances contributed to a planktonic community dominated by cryptophytes. (Auth.)

50-1283

Method to calculate pack ice driving forces.

Evgin, E., Zhan, C., Frederking, R.M.W., *Journal of offshore mechanics and arctic engineering,* May 1995, 117(2), p.145-150, 11 refs.

Sea ice, Pack ice, Ice mechanics, Loads (forces), Dynamic loads, Ice solid interface, Ice creep, Stress concentration, Analysis (mathematics)

50-1284

Theoretical investigation of the absorption of optical radiation by oriented ice plates in the IR range.

Popov, A.A., Shefer, O.V., *Atmospheric and oceanic optics,* Jan. 1994, 7(1), p.8-11, Translated from Optika atmosfery i okeana. 5 refs.

Cloud physics, Radiation balance, Ice crystal optics, Orientation, Refractivity, Radiation absorption, Infrared radiation, Attenuation, Albedo, Analysis (mathematics)

50-1285

On the scattered radiation intensity fluctuations for a focused laser beam in snowfall.

Vostretsov, N.A., Zhukov, A.F., *Atmospheric and oceanic optics,* Jan. 1994, 7(1), p.12-14, Translated from Optika atmosfery i okeana. 7 refs.

Precipitation (meteorology), Falling snow, Light scattering, Snow optics, Lasers, Wave propagation, Spectra, Remote sensing, Detection

50-1286

On the origin of the long period sawtooth shape of the late Pleistocene paleoclimate records: the first derivative of the earth's orbital eccentricity.

Rial, J.A., *Geophysical research letters,* Aug. 1, 1995, 22(15), p.1997-2000, 20 refs.

Paleoclimatology, Pleistocene, Climatic changes, Insolation, Periodic variations, Marine deposits, Isotope analysis, Ice volume, Glacier oscillation, Correlation

50-1287

Chlorophyll fluorescence as a measure of cold hardiness and freezing stress in 1 + 1 Douglas-fir seedlings.

Fisker, S.E., Rose, R., Haase, D.L., *Forest Science,* Aug. 1995, 41(3), p.564-575, 31 refs.

Forestry, Trees (plants), Plant physiology, Cold stress, Frost resistance, Photosynthesis, Damage, Cold weather tests, Chlorophylls

50-1288

Problems in the ecology of polar regions, vol.2; collected scientific papers. [Problemy ekologii poliarnykh oblasteĭ, vyp. 2; sbornik nauchnykh trudov]

Bogoslovskaia, L.S., ed, Moscow, Nauka, 1991, 123p., In Russian. Refs. passim. For selected papers see 50-1289 through 50-1321.

Ecology, Environmental impact, Environmental protection, Ecosystems, Tundra terrain, Geocryology, Tundra vegetation, Marine biology

50-1289

Ways of solving problems in the protection of natural complexes in the high Arctic. [Podkhody k resheniiu problem okhrany prirodnykh kompleksov vysokoshirotnoĭ Arktiki]

Belikov, S.E., Kupriianov, A.G., Problemy ekologii poliarnykh oblasteĭ, vyp.2; sbornik nauchnykh trudov (Problems in the ecology of polar regions, vol.2; collected scientific papers). Edited by L.S. Bogoslovskaia, Moscow, Nauka, 1991, p.7-11, In Russian.

Environmental protection, Environmental impact

50-1290

Methods for creating a monitor of dangerous natural phenomena using an electronic map. [Metody postroeniia monitoringa opasnykh prirodnykh iavleniĭ s ispol'zovaniem elektronnykh kart]

Bidenko, S.I., Problemy ekologii poliarnykh oblasteĭ, vyp.2; sbornik nauchnykh trudov (Problems in the ecology of polar regions, vol.2; collected scientific papers). Edited by L.S. Bogoslovskaia, Moscow, Nauka, 1991, p.12-13, In Russian. 3 refs.

Warning systems, Monitors, Maps, Computer applications, Mapping, Safety

50-1291

Some aspects of the protection of water-bog areas in European northeastern USSR. [Nekotorye aspekty okhrany vodno-bolotnykh ugodiĭ evropeĭskogo Severo-Vostoka SSSR]

Mineev, IU.N., Problemy ekologii poliarnykh oblasteĭ, vyp.2; sbornik nauchnykh trudov (Problems in the ecology of polar regions, vol.2; collected scientific papers). Edited by L.S. Bogoslovskaia, Moscow, Nauka, 1991, p.13-15, In Russian.

Environmental protection, Swamps, Tundra terrain, Russia

50-1292

Command organization on the Severnaya Zemlya archipelago. [Organizatsiia zakaznika na arkhipelage Severnaia Zemlya]

Petrov, V.N., Smirnov, I.P., Problemy ekologii poliarnykh oblasteĭ, vyp.2; sbornik nauchnykh trudov (Problems in the ecology of polar regions, vol.2; collected scientific papers). Edited by L.S. Bogoslovskaia, Moscow, Nauka, 1991, p.15-16, In Russian.

Environmental protection, Environmental impact, Research projects, Russia—Severnaya Zemlya

50-1293

Achieving protection of the coastal belt of the Taymyr Peninsula and nearby islands. [Osushchestvlenie okhrany beregovoĭ polosy Taĭmyrskogo poluostrova i prilegaiushchikh ostrovov]

Chernous, V.F., Problemy ekologii poliarnykh oblasteĭ, vyp.2; sbornik nauchnykh trudov (Problems in the ecology of polar regions, vol.2; collected scientific papers). Edited by L.S. Bogoslovskaia, Moscow, Nauka, 1991, p.16-17, In Russian.

Environmental protection, Shores, Russia—Taymyr Peninsula

50-1294

Question of the endurance of arctic ecosystems in natural and anthropogenic changes in the environmental conditions. [K voprosu ob ustoĭchivosti arkticheskikh ekosistem k estestvennym i antropogennym izmeneniiam usloviĭ sredy]

Golikov, A.N., Skarlato, O.A., Problemy ekologii poliarnykh oblasteĭ, vyp.2; sbornik nauchnykh trudov (Problems in the ecology of polar regions, vol.2; collected scientific papers). Edited by L.S. Bogoslovskaia, Moscow, Nauka, 1991, p.17-21, In Russian. 6 refs.

Ecosystems, Environmental impact, Biomass, Plankton

50-1295

Dynamics of the ecosystem of the Barents Sea under conditions of the economic development of the Arctic shelf. [Dinamika ekosistemy Barentseva moria v usloviiakh khoziaĭstvennogo osvoeniia shel'fa Arktiki]

Matishov, G.G., Savinova, T.N., Problemy ekologii poliarnykh oblasteĭ, vyp.2; sbornik nauchnykh trudov (Problems in the ecology of polar regions, vol.2; collected scientific papers). Edited by L.S. Bogoslovskaia, Moscow, Nauka, 1991, p.22-23, In Russian.

Ecosystems, Environmental protection, Marine biology, Barents Sea

50-1296

Analysis of the seasonal dynamics of the functional state of high Arctic shallow ecosystems in Franz Josef Land using ABC (Abundance Biomass Comparison). [Otsenka sezonnoĭ dinamiki funktsional'nogo sostoianiia vysokoarkticheskikh melkovodnykh ekosistem zemli Frantsa-Iosifa metodom ABC (Abundance Biomass Comparison)]

Averintsev, V.G., Problemy ekologii poliarnykh oblasteĭ, vyp.2; sbornik nauchnykh trudov (Problems in the ecology of polar regions, vol.2; collected scientific papers). Edited by L.S. Bogoslovskaia, Moscow, Nauka, 1991, p.23-24, In Russian.

Seasonal variations, Ecosystems, Biomass, Marine biology, Russia—Franz Josef Land

50-1297

Basic problems in the study of biota and its role in the life of Arctic ecosystems. [Osnovnye zadachi izucheniia bioty i ee roli v zhizni Arkticheskikh ekosistem]

Kaliakin, V.N., Kaliakina, N.M., Problemy ekologii poliarnykh oblasteĭ, vyp.2; sbornik nauchnykh trudov (Problems in the ecology of polar regions, vol.2; collected scientific papers). Edited by L.S. Bogoslovskaia, Moscow, Nauka, 1991, p.24-28, In Russian.

Ecosystems, Ecology, Environmental impact

50-1298

Principles for determining environmental protection measures for the West Siberian Arctic and Subarctic regions under conditions of economic development. [Printsipy opredeleniia prirodookhrannykh meropriiatiĭ dlia landshaftov Zapadno-Sibirskoĭ Arktiki i Subarktiki v usloviiakh khoziaĭstvennogo osvoeniia]

Chistov, S.V., Problemy ekologii poliarnykh oblasteĭ, vyp.2; sbornik nauchnykh trudov (Problems in the ecology of polar regions, vol.2; collected scientific papers). Edited by L.S. Bogoslovskaia, Moscow, Nauka, 1991, p.29-35, In Russian. 3 refs.

Landscape types, Subarctic landscapes, Environmental protection, Ecology, Economic development, Environmental impact, Tundra terrain, Russia—Siberia

50-1299

Problems in the rational use of coastal zones of arctic seas. [Problemy ratsional'noĭ ekspluatatsii beregovoĭ zony arkticheskikh moreĭ]

Sovershaev, V.A., Novikov, V.N., Problemy ekologii poliarnykh oblasteĭ, vyp.2; sbornik nauchnykh trudov (Problems in the ecology of polar regions, vol.2; collected scientific papers). Edited by L.S. Bogoslovskaia, Moscow, Nauka, 1991, p.35-40, In Russian. 9 refs.

Shores, Fast ice, Abrasion, Economic development, Environmental protection, Environmental impact

50-1300

Thermo-abrasion and thermo-erosion of the shores of arctic seas as a system of exogenous processes. [Termoabraziia i termoeroziia beregov arkticheskikh moreĭ kak sistema ekzogennykh protsessov]

Voskresenskiĭ, K.S., Novikov, V.N., Problemy ekologii poliarnykh oblasteĭ, vyp.2; sbornik nauchnykh trudov (Problems in the ecology of polar regions, vol.2; collected scientific papers). Edited by L.S. Bogoslovskaia, Moscow, Nauka, 1991, p.40-42, In Russian.

Abrasion, Erosion, Shore erosion

50-1301

Changes in the geocryological conditions of developed lower reaches and estuaries of northern rivers. [Izmenenie geokriologicheskoĭ obstanovki osvaivaemykh nizov'ev i ust'ev severnykh rek]

Shvetsov, P.F., Zhigalin, A.D., Problemy ekologii poliarnykh oblasteĭ, vyp.2; sbornik nauchnykh trudov (Problems in the ecology of polar regions, vol.2; collected scientific papers). Edited by L.S. Bogoslovskaia, Moscow, Nauka, 1991, p.42-48, In Russian. 4 refs.

Rivers, Geocryology, Air temperature, Thaw depth, Russia—Pechora River

50-1302

Ecological role of a subaqueous cryolithozone. [Ekologicheskaia rol' subakval'noĭ kriolitozony]

Zhigarev, L.A., Problemy ekologii poliarnykh oblasteĭ, vyp.2; sbornik nauchnykh trudov (Problems in the ecology of polar regions, vol.2; collected scientific papers). Edited by L.S. Bogoslovskaia, Moscow, Nauka, 1991, p.48-50, In Russian.

Ecology, Frozen rocks, Geocryology, Mining, Frozen rock temperature, Subsea permafrost

50-1303

Technogenic cryomorphogenesis and pollution of river estuaries in the Arctic basin. [Tekhnogenii kriomorfogenez i zagriaznenie ust'ev rek arkticheskogo basseina]

Grigor'ev, M.N., Shumilov, IU.V., Problemy ekologii poliarnykh oblastei, vyp.2; sbornik nauchnykh trudov (Problems in the ecology of polar regions, vol.2; collected scientific papers). Edited by L.S. Bogoslovskaia, Moscow, Nauka, 1991, p.50-51, In Russian.

Estuaries, Rivers, Water pollution, Geocryology, Russia—Yana River, Russia—Omoloy River

50-1304

Problems in geocryological studies in northern Yakutia. [Nekotorye problemy merzlotnykh issledovanii na severe IAkutii]

Liubomirov, A.S., Klimovskii, I.V., Problemy ekologii poliarnykh oblastei, vyp.2; sbornik nauchnykh trudov (Problems in the ecology of polar regions, vol.2; collected scientific papers). Edited by L.S. Bogoslovskaia, Moscow, Nauka, 1991, p.52-53, In Russian.

Geocryology, Geomorphology, Hydrogeology, Russia—Yakutia

50-1305

Technogenic relief on Novosibirsk Islands and Severnaya Zemlya. [Tekhnogenyi rel'ef na Novosibirskikh ostrovakh i Severnoi Zemle]

Bol'shiianov, D.IA., Makeev, V.M., Problemy ekologii poliarnykh oblastei, vyp.2; sbornik nauchnykh trudov (Problems in the ecology of polar regions, vol.2; collected scientific papers). Edited by L.S. Bogoslovskaia, Moscow, Nauka, 1991, p.53-55, In Russian.

Topographic features, Topographic surveys, Russia—Severnaya Zemlya, Russia—Sibirskie Islands

50-1306

Estimating deformation in river floodplains under conditions of human activity. [Otsenka deformatsii rechnykh poim v usloviiakh antropogennoi deiatel'nosti]

Zimichev, V.P., Problemy ekologii poliarnykh oblastei, vyp.2; sbornik nauchnykh trudov (Problems in the ecology of polar regions, vol.2; collected scientific papers). Edited by L.S. Bogoslovskaia, Moscow, Nauka, 1991, p.55-56, In Russian.

Floodplains, River flow, Forecasting, Deformation, Environmental impact

50-1307

Questions in the protection of relict associations on arctic islands and in coastal areas of the Chukotskiy tundra. [Voprosy okhrany reliktovykh soobshchestv arkticheskikh ostrovov i poberezhii Chukotskoi tundry]

IUrtsev, B.A., Problemy ekologii poliarnykh oblastei, vyp.2; sbornik nauchnykh trudov (Problems in the ecology of polar regions, vol.2; collected scientific papers). Edited by L.S. Bogoslovskaia, Moscow, Nauka, 1991, p.56-63, In Russian. 6 refs.

Tundra vegetation, Environmental protection, Vegetation patterns, Paleobotany, Plants (botany), Russia—Chukotskiy Peninsula

50-1308

Effect of the mineral composition of soils on the coastal vegetation of the Chukotskiy Peninsula. [Vliianie mineral'nogo sostava pochv na rastitel'nost' primorskoi polosy Chukotki]

Sergienko, L.A., Problemy ekologii poliarnykh oblastei, vyp.2; sbornik nauchnykh trudov (Problems in the ecology of polar regions, vol.2; collected scientific papers). Edited by L.S. Bogoslovskaia, Moscow, Nauka, 1991, p.63-65, In Russian.

Soil composition, Minerals, Saline soils, Plants (botany), Littoral zone, Site surveys, Tundra vegetation, Russia—Chukotskiy Peninsula

50-1309

Results from studies of anthropogenic effect on plant communities on Oktiabr'skaya Revoliutsiya Island. [Nekotorye rezul'taty izucheniia antropogennogo vozdeistviia na rastitel'nye soobshchestva O. Oktiabr'skaia Revoliutsiia]

Gavrilo, M.V., Problemy ekologii poliarnykh oblastei, vyp.2; sbornik nauchnykh trudov (Problems in the ecology of polar regions, vol.2; collected scientific papers). Edited by L.S. Bogoslovskaia, Moscow, Nauka, 1991, p.65-66, In Russian.

Plants (botany), Environmental impact, Grasses, Mosses, Russia—Severnaya Zemlya, Russia—Oktiabr'skaya Revoliutsiya Island

50-1310

Forecasting the composition of post-lacustrine meadows in the Yakutsk Arctic. [Prognozirovanie sostoianiia posleozernykh lugov IAkutskoi Arktiki]

Bosikov, N.P., Problemy ekologii poliarnykh oblastei, vyp.2; sbornik nauchnykh trudov (Problems in the ecology of polar regions, vol.2; collected scientific papers). Edited by L.S. Bogoslovskaia, Moscow, Nauka, 1991, p.66-67, In Russian.

Forecasting, Meadow soils, Ground ice, Sapropel', Russia—Yakutia

50-1311

Rational use of natural resources and protection of the zone of algae macrophytes in a northern region. [Ratsional'noe prirodopol'zovanie i okhrana poiasa vodoroslei makrofitov severnogo regiona]

Makarov, V.N., Problemy ekologii poliarnykh oblastei, vyp.2; sbornik nauchnykh trudov (Problems in the ecology of polar regions, vol.2; collected scientific papers). Edited by L.S. Bogoslovskaia, Moscow, Nauka, 1991, p.67-68, In Russian.

Environmental protection, Algae, Ecosystems

50-1312

Industrial use of natural resources of northeastern USSR and problems of protecting hydrobionts. [Promyshlennoe ispol'zovanie prirodnykh resursov severo-vostoka SSSR i problemy okhrany gidrobiontov]

Kuklin, A.I., Problemy ekologii poliarnykh oblastei, vyp.2; sbornik nauchnykh trudov (Problems in the ecology of polar regions, vol.2; collected scientific papers). Edited by L.S. Bogoslovskaia, Moscow, Nauka, 1991, p.68-72, In Russian.

Natural resources, Environmental protection

50-1313

Composition and characteristics of the distribution of ichthyoplankton in the southwestern Barents Sea. [Sostav i osobennosti raspredeleniia ikhtioplanktona v iugo-zapadnoi chasti Barentseva moria]

Zalesskikh, L.M., Problemy ekologii poliarnykh oblastei, vyp.2; sbornik nauchnykh trudov (Problems in the ecology of polar regions, vol.2; collected scientific papers). Edited by L.S. Bogoslovskaia, Moscow, Nauka, 1991, p.72-73, In Russian.

Plankton, Marine biology, Barents Sea

50-1314

Hydrobiological observations in the Chaunskaya Bay of the East Siberian Sea. [Gidrobiologicheskie nabliudeniia v Chaunskoi gube Vostochno-Sibirskogo moria]

Gaev, S.IU., Problemy ekologii poliarnykh oblastei, vyp.2; sbornik nauchnykh trudov (Problems in the ecology of polar regions, vol.2; collected scientific papers). Edited by L.S. Bogoslovskaia, Moscow, Nauka, 1991, p.76-77, In Russian.

Biomass, Ecology, Marine biology, Ecosystems, East Siberian Sea, Russia—Chukotskiy Peninsula, Russia—Chaunskaya Bay

50-1315

Natural chemiluminescence of the marine environment under conditions of polar day and night. [O estestvennoi khemiliuminestsentsii morskoi sredy v usloviiakh poliarnogo dnia i poliarnoi nochi]

Lapshin, A.I., Problemy ekologii poliarnykh oblastei, vyp.2; sbornik nauchnykh trudov (Problems in the ecology of polar regions, vol.2; collected scientific papers). Edited by L.S. Bogoslovskaia, Moscow, Nauka, 1991, p.77-78, In Russian.

Luminescence, Sea water, Storms, Wind factors, Cavitation, Chemiluminescence

50-1316

Integrated analysis of oil hydrocarbons in a marine environment and in the fat of animals from exogenous pollution of their environment. [Kompleksnyi analiz uglevodorodov nefti v morskoi srede i v zhire zhivotnykh pri ekzogennykh zagriazneniia sredy ikh obitaniia]

Khesina, A.IA., Krivoshaeva, L.V., Problemy ekologii poliarnykh oblastei, vyp.2; sbornik nauchnykh trudov (Problems in the ecology of polar regions, vol.2; collected scientific papers). Edited by L.S. Bogoslovskaia, Moscow, Nauka, 1991, p.92-99, In Russian. 22 refs.

Hydrocarbons, Water pollution, Pollution, Animals, Water chemistry, Bottom sediment, Environmental impact

50-1317

Possible ways of preventing the falling of carcinogenic hydrocarbons onto surface waters and coastal zones of seas. [Vozmozhnye puti preduprezhdeniia popadaniia kantserogennykh uglevodorodov v poverkhnostnye vodoemy i pribrezhnye zony morei]

Bez"iazykova, A.N., Khesina, A.IA., Problemy ekologii poliarnykh oblastei, vyp.2; sbornik nauchnykh trudov (Problems in the ecology of polar regions, vol.2; collected scientific papers). Edited by L.S. Bogoslovskaia, Moscow, Nauka, 1991, p.99-103, In Russian.

Hydrocarbons, Radioactivity, Environmental protection, Water pollution

50-1318

Technological-ecological problems in navigation. [Tekhniko-ekologicheskie problemy sudokhodstva]

Stepanov, A.L., Problemy ekologii poliarnykh oblastei, vyp.2; sbornik nauchnykh trudov (Problems in the ecology of polar regions, vol.2; collected scientific papers). Edited by L.S. Bogoslovskaia, Moscow, Nauka, 1991, p.103-108, In Russian.

Ports, Marine transportation, Navigation, Environmental impact, Economic analysis, Cold weather operation

50-1319

Navigation and the pollution of the coastal zone of Arctic seas. [Sudokhodstvo i zagriaznenie beregovoi zony arkticheskikh morei]

Slevich, S.B., Latukhov, S.V., Dubershtein, A.M., Problemy ekologii poliarnykh oblastei, vyp.2; sbornik nauchnykh trudov (Problems in the ecology of polar regions, vol.2; collected scientific papers). Edited by L.S. Bogoslovskaia, Moscow, Nauka, 1991, p.108-113, In Russian.

Navigation, Pollution, Environmental impact, Littoral zone, Oil spills, Water pollution, Marine transportation, Cold weather operation, Petroleum transportation

50-1320

Effect of oil pollution on the ecosystems of Kola Bay. [Vliianie neftianogo zagriazneniia na ekosistemy Kol'skogo zaliva]

Sakulina, M.V., Kireeva, L.I., Bogdanova, K.N., Shaliapina, T.N., Problemy ekologii poliarnykh oblastei, vyp.2; sbornik nauchnykh trudov (Problems in the ecology of polar regions, vol.2; collected scientific papers). Edited by L.S. Bogoslovskaia, Moscow, Nauka, 1991, p.113-114, In Russian.

Oil spills, Environmental impact, Ecosystems, Water pollution, Bottom sediment, Russia—Kola Bay

50-1321

Analyzing water quality in the Pechora Bay of the Barents Sea. [Otsenka sostoianiia kachestva vod Pechorskoĭ guby Barentseva moria]

Kuznetsov, V.S., Miskevich, I.V., Problemy ekologii poliarnykh oblasteĭ, vyp.2; sbornik nauchnykh trudov (Problems in the ecology of polar regions, vol.2; collected scientific papers). Edited by L.S. Bogoslovskaia, Moscow, Nauka, 1991, p.114-115, In Russian.

Water pollution, Water chemistry, Environmental impact, Oil spills, Barents Sea, Russia—Pechora Bay

50-1322

Geophysical studies of the Antarctic Peninsula.

Fournier, H.G., *Acta geodaetica et geophysica Hungarica,* 1994, 29(1-2), p.19-38, 36 refs.

Permafrost, Geomagnetism, Seismic surveys, Electromagnetic prospecting, Antarctica—Seymour Island, Antarctica—James Ross Island, Antarctica—Robertson Island

An account is given of the procedures followed and criticism of their use to obtain an acceptable synthesis of results from six campaigns on the Antarctic Peninsula using four geophysical methods: magnetotelluric, audiomagnetotelluric, electric, and seismic soundings, from 1979-1992. Using results from a total of 115 soundings made in an area 200 km in diameter at the NE end of the Antarctic Peninsula, the author describes 1) the permafrost; 2) the brine layer below the permafrost; 3) the contact between the Lower and Upper Cretaceous; 4) the sedimentary basement; and (5) the top of the intermediate conductive layer (ICL). (Auth. mod.)

50-1323

Response of a natural *Phaeocystis* population to ambient fluctuations of UVB radiation caused by antarctic ozone depletion.

Karentz, D., Spero, H.J., *Journal of plankton research,* Sep. 1995, 17(9), p.1771-1789, 62 refs.

Ice edge, Plankton, Ozone, Sea water, Chemical composition, Ultraviolet radiation, Antarctica—Bellingshausen Sea

During the austral spring of 1990, rotation of the antarctic polar vortex resulted in a twofold change in ozone concentrations (170-380 Dobson units) over regions of the marginal ice zone of the Bellingshausen Sea. The changes in ozone caused significant variations in incident and in-water UVB fluences. Phytoplankton cell densities, nutrient concentrations, DNA concentrations and stable carbon isotope ratios ($\delta^{13}C$) of particulate organic and dissolved inorganic carbon were monitored for a 5-week period during the ozone fluctuations. *Phaeocystis* was the dominant phytoplankton taxon. Cell numbers were positively correlated to ozone and the $\delta^{13}C$ of seawater ΣCO_2, and negatively correlated to nutrient concentrations. The densities of co-occurring diatoms were not related to changes in ozone, $\delta^{13}C$ or nutrients. These observations suggest that *Phaeocystis* sp. responds very rapidly and adversely to increased UVB exposure, and that seawater $\delta^{13}C$ data may be a useful tool for assessing the physiological state of high-latitude marine communities relative to increased UVB levels. (Auth.)

50-1324

Biogeographic structure of the microphytoplankton assemblages of the South Atlantic and the southern ocean during austral summer.

Froneman, P.W., McQuaid, C.D., Perissinotto, R., *Journal of plankton research,* Sep. 1995, 17(9), p.1791-1802, 41 refs.

Plankton, Distribution, Sea water, Chemical composition, Sea ice, —South Atlantic Ocean

Microphytoplankton distribution in the Atlantic sector of the southern ocean was investigated along a transect during the SAAMES II cruise in late austral summer (Jan.-Feb.) 1993. Samples were collected at ca. 60 km intervals between 34 and 70°S for the analysis of mineral nutrients and the identification and enumeration of microphytoplankton. Peaks in microphytoplankton abundance were recorded in the neritic waters of Africa and Antarctica, at all major oceanic fronts, and in the marginal ice zone (MIZ). Partial correlation analysis indicated that 45% of the total variance associated with microphytoplankton abundance could be explained by silicate and phosphate concentrations, while temperature accounted for 65% (P<0.001). Cluster and ordination analyses identified two major groups of stations, one north and one south of the Subantarctic Front (SAF). This division appears to be related to differences in temperature and silicate concentrations. Each region comprised distinct microphytoplankton subgroups associated with specific water masses or hydrological features. (Auth. mod.)

50-1325

Ultraviolet radiation and its effects on organisms in aquatic environments.

Holm-Hansen, O., Lubin, D., Helbling, E.W., Environmental UV photobiology, edited by A.R. Young, L.O. Björn, J. Moan and W. Nultsch, New York, Plenum Press, 1993, p.379-425, Refs. p.418-425.
DLC QP82.2.U4E85

Marine biology, Ultraviolet radiation, Photosynthesis, Plankton, Ozone, Atmospheric composition

Because the most rapid changes in incident UV-B radiation occur under the ozone hole in the Antarctic, there have been extensive studies to ascertain whether or not enhanced UV-B radiation resulting from ozone depletion in the stratosphere will have any calamitous effects on the southern ocean ecosystem. Some findings from these studies concerning Antarctica are outlined in eight pages of this chapter, including incubator experiments, *in situ* incubation, and effect of enhanced UV-B radiation.

50-1326

Ultraviolet sunlight reaching the Earth's surface: a review of recent research.

Frederick, J.E., *Photochemistry and photobiology,* 1993, 57(1), p.175-178, 29 refs.
DLC QD601.A1P48

Ozone, Atmospheric composition, Ultraviolet radiation, Photosynthesis

This paper summarizes current knowledge of ultraviolet (UV) solar radiation reaching the earth's surface with emphasis on results obtained since the last yearly review. The implications of large UV-B irradiances for the antarctic ecosystem are discussed. Although substantial enhancements over the normal background radiation levels have occurred, the absolute irradiances have not exceeded those typical of an unperturbed summer at middle latitudes. Available data indicate a measurable inhibition of photosynthesis in antarctic phytoplankton during periods of large ozone depletion in 1990. It is concluded that much more work needs to be done before definitive statements can be made concerning biological and ecological effects of current UV-B radiation levels over Antarctica. (Auth. mod.)

50-1327

ECMWF analyses and predictions of the surface climate of Greenland and Antarctica.

Genthon, C., Braun, A., *Journal of climate,* Oct. 1995, 8(10), p.2324-2332, 18 refs.

Weather forecasting, Climatology, Polar atmospheres, Surface temperature, Snow accumulation, Meteorological data, Glacier mass balance, Models, Spectra, Greenland, Antarctica

A global reanalysis of recent climate is being carried out at the European Centre for Medium-Range Weather Forecasts (ECMWF). At the surface of the polar ice sheets (the atmospheric boundary condition for ice evolution), observations of climate are particularly scarce. To estimate how the new ECMWF climatology might help provide climate data over the polar ice sheets, the authors present 6 years of previously analyzed surface temperature and predicted precipitation for both Greenland and Antarctica. Analyses are the result of 6-h forecasts corrected to fit with reports from weather stations. In spite of a sparse coverage of the observation network, the analyzed temperature, including seasonality, is very reasonable. Interannual variability, however, appears greater than suggested by satellite observation. Mean annual precipitation in Antarctica is fairly well represented, but it is difficult to determine whether a lack of seasonality on the plateau is reasonable or not. Precipitation in coastal Greenland is often too high, and accumulation might be low inland. Mean predicted accumulations, 1594 x 10^{12} and 539 x 10^{12} kg/yr, over the Antarctic and Greenland ice sheets, respectively, are in good agreement with previous estimates. It is reasonable to expect that the reanalysis will largely satisfy the need for a full-coverage gridded climatology of the two polar ice sheets. (Auth. mod.)

50-1328

Sensitivity studies of northern hemisphere glaciation using an atmospheric general circulation model.

Dong, B.W., Valdes, P.J., *Journal of climate,* Oct. 1995, 8(10), p.2471-2496, 69 refs.

Paleoclimatology, Climatic changes, Glaciation, Ice growth, Insolation, Surface temperature, Snow depth, Albedo, Snow cover effect, Sea ice distribution, Mathematical models

50-1329

Millimeter wave spectroscopic measurements over the South Pole. 1. A study of stratospheric dynamics using N_2O observations.

Crewell, S., Cheng, D.J., De Zafra, R.L., Trimble, C., *Journal of geophysical research,* Oct. 20, 1995, 100(D10), p.20,839-20,844, 23 refs.

Polar atmospheres, Climatology, Atmospheric composition, Aerosols, Spectroscopy, Profiles, Turbulent diffusion, Seasonal variations, Antarctica—Amundsen-Scott Station

Millimeter wave measurements of N_2O and O_3 were made nearly continuously from Feb. 1993 through early Jan. 1994 at the Amundsen-Scott Station. In order to separate chemical and dynamical effects, this paper uses the observations of the long-lived tracer N_2O to study stratospheric dynamics. The main emphasis is on the synoptic evolution of the polar vortex over an entire winter period, and quantitative results are given for various times and altitudes. Diabatic descent rates derived for different altitude levels showed the strongest descent in austral fall at high altitudes, agreeing fairly well with other model predictions. Subsidence was observed to continue until late Oct., well after polar sunrise. The breakdown of the vortex occurred first in the upper stratosphere, marked by the intrusion of N_2O-rich air at these altitudes, consistent with trajectory calculations. Calculated descent rates are not consistent with the idea that the polar vortex is a "flowing processor", rather it should be viewed as an isolated system. (Auth. mod.)

50-1330

Dynamics of wintertime stratospheric transport in the Geophysical Fluid Dynamics Laboratory SKYHI general circulation model.

Eluszkiewicz, J., Plum, R.A., Nakamura, N., *Journal of geophysical research,* Oct. 20, 1995, 100(D10), p.20,883-20,900, 36 refs.

Polar atmospheres, Atmospheric physics, Stratosphere, Atmospheric circulation, Aerosols, Turbulent diffusion, Temperature effects, Seasonal variations, Models

The kinematics of air motion in and around the polar vortices in the Geophysical Fluid Dynamics Laboratory SKYHI general circulation model are investigated by means of a Lagrangian particle analysis. Particles initialized in the mesosphere and upper stratosphere rapidly descend to the middle stratosphere. The dynamics of polar descent are investigated by diagnosing the forcing of the residual circulation. In the upper stratosphere, diabatic descent inside polar vortices is driven by Eliassen-Palm flux divergences associated with motions of period shorter than 2 days (presumably gravity waves) in the Antarctic, but of period greater than 3 days (presumably planetary waves) in the Arctic. In the lower stratosphere, long period processes, mainly from the 10 to 1 hPa region, produce descent near the vortex edge in both hemispheres. (Auth. mod.)

50-1331

Stratospheric loading and optical depth estimates of explosive volcanism over the last 2100 years derived from the Greenland Ice Sheet Project 2 ice core.

Zielinski, G.A., *Journal of geophysical research,* Oct. 20, 1995, 100(D10), p.20,937-20,955, 82 refs.

Climatology, Volcanic ash, Aerosols, Atmospheric composition, Optical properties, Turbidity, Stratosphere, Ice sheets, Ice cores, Sampling, Correlation, Periodic variations, Greenland

50-1332

Remote sensing of ClO and HCl over northern Scandinavia in winter 1992 with an airborne submillimeter radiometer.

Wehr, T., et al, *Journal of geophysical research,* Oct. 20, 1995, 100(D10), p.20,957-20,968, 30 refs.

Polar atmospheres, Climatology, Stratosphere, Atmospheric composition, Atmospheric attenuation, Profiles, Spectra, Aerosols, Aerial surveys, Radiometry, Seasonal variations

50-1333

Laboratory studies of the formation of polar stratospheric clouds: nitric acid condensation on thin sulfuric acid films.

Iraci, L.T., Middlebrook, A.M., Tolbert, M.A., *Journal of geophysical research,* Oct. 20, 1995, 100(D10), p.20,969-20,977, 38 refs.

Climatology, Cloud physics, Ozone, Aerosols, Condensation, Polar stratospheric clouds, Infrared spectroscopy, Heterogeneous nucleation, Simulation

In a laboratory simulation of polar stratospheric cloud formation, thin sulfuric acid films were exposed to HNO_3 and H_2O and cooled to temperatures near the ice frost point. Fourier transform infrared (FTIR) spectroscopy was used to probe the condensed-phase species during isothermal experiments, and gas pressures were monitored with mass spectrometry. Supercooled liquid sulfuric acid films exposed to HNO_3 showed indications of HNO_3 uptake to form ternary solutions, followed by crystallization of nitric acid trihydrate (NAT). These film studies suggest that crystalline polar stratospheric cloud (PSC) growth is most easily accomplished when stratospheric sulfate aerosols (SSAs) remain liquid, absorb HNO_3, and produce crystalline nitric acid trihydrate via heterogeneous nucleation. If SSAs crystallize to SAT at some point during the winter, nitric acid condensation is hindered, and PSC formation could become more difficult. (Auth. mod.)

50-1334

Spatial variation in high-latitude methane flux along a transect across Siberian and European tundra environments.

Christensen, T.R., Jonasson, S., Callaghan, T.V., Havström, M., *Journal of geophysical research,* Oct. 20, 1995, 100(D10), p.21,035-21,045, 38 refs.

Tundra climate, Atmospheric composition, Sampling, Tundra soils, Wetlands, Soil air interface, Vapor transfer, Natural gas, Soil chemistry, Geochemical cycles, Russia—Siberia

50-1335

Cloud scattering optical depth and local surface albedo in the Antarctic: simultaneous retrieval using ground-based radiometry.

Ricchiazzi, P., Gautier, C., Lubin, D., *Journal of geophysical research,* Oct. 20, 1995, 100(D10), p.21,091-21,104, 36 refs.

Clouds (meteorology), Cloud cover, Light scattering, Radiance, Solar radiation, Optical properties, Ice cover effect, Albedo, Radiometry, Climatic factors, Antarctica—Palmer Station

Solar irradiance measurements from a ground-based multichannel radiometer system deployed at Palmer Station during spring 1991 are used to simultaneously estimate cloud scattering optical depth and surface albedo. Irradiance measurements at 410 and 630 nm, in conjunction with a discrete ordinate radiative transfer (RT) model, enable this simultaneous retrieval by exploiting the wavelength dependence in Rayleigh scattering strength. The RT model is used in an inverse mode to find the values of surface albedo and cloud optical depth that match calculated and measured irradiances at both wavelengths. Under the homogeneous stratiform cloud cover for which the technique applies, surface albedo at 630 nm was consistently retrieved at above 0.9. For most homogeneous overcast conditions, cloud optical depth (at 630 nm) is found to be in the range of 20-50, with a most probable value of 25. (Auth. mod.)

50-1336

Seasonal abundance and size variation in antarctic populations of the Cladoceran *Daphniopsis studeri.*

Bayliss, P.R., Laybourn-Parry, J., *Antarctic science,* Dec. 1995, 7(4), p.393-394, 9 refs.

Limnology, Plankton, Biomass, Sampling, Seasonal variations, Antarctica—Krok Lake

50-1337

Geomorphological and neotectonic features of Hurd Peninsula, Livingston Island, South Shetland Islands.

Pallàs, R., Vilaplana, J.M., Sàbat, F., *Antarctic science,* Dec. 1995, 7(4), p.395-406, 47 refs.

Geomorphology, Glacial geology, Marine geology, Tectonics, Glacial erosion, Moraines, Age determination, Geologic structures, Deformation, Antarctica—Livingston Island

50-1338

Synoptic forcing of wind and temperature in a large cirque 300 km from the coast of East Antarctica.

Jonsson, S., *Antarctic science,* Dec. 1995, 7(4), p.409-420, 35 refs.

Polar atmospheres, Synoptic meteorology, Turbulent boundary layer, Cirques, Atmospheric pressure, Wind direction, Velocity measurement, Ice air interface, Topographic effects, Ice cover effect, Seasonal variations, Antarctica—Queen Maud Land

50-1339

Case study of turbulent parameters during the antarctic winter.

Yagüe, C., Redondo, J.M., *Antarctic science,* Dec. 1995, 7(4), p.421-433, 25 refs.

Polar atmospheres, Air flow, Gravity waves, Atmospheric boundary layer, Turbulent exchange, Heat transfer, Surface temperature, Temperature inversions, Stratification, Wind velocity, Ice air interface, Antarctica—Brunt Ice Shelf

50-1340

Proceedings. [Quanguo dongtu xueshu huiyi taolunwen xuanji]

Chinese National Conference on Permafrost, 3rd, Harbin, China, Aug. 19-24, 1986, Beijing, Kexue chubanshe (Science Press), 1989, 399p., In Chinese with English table of contents. Refs. passim. Edited by the Lanzhou Institute of Glaciology and Geocryology of the Chinese Academy of Sciences (Zhongguo kexueyuan Lanzhou bingchuan dongtu yanjiusuo). For individual papers see 50-1341 through 50-1400.

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Permafrost distribution, Permafrost thickness, Soil freezing, Frozen ground strength, Frozen ground thermodynamics, Frost heave, Frost protection, Soil stabilization

50-1341

Engineering geological conditions of permafrost at the Gulian Coal Mine area in the Da Hinggan Ling region.

Guo, D.X., Huang, Y.Z., Wang, J.C., Zeng, Z.G., He, Y.X., Wang, Y.J., Quanguo dongtu xueshu huiyi taolunwen xuanji (Chinese National Conference on Permafrost, 3rd, Harbin, China, Aug. 19-24, 1986. Proceedings), Beijing, Kexue chubanshe (Science Press), 1989, p.2-9, In Chinese. 4 refs.

Permafrost surveys, Permafrost distribution, Permafrost thickness, Coal, Mining, China—Greater Khingan Range

50-1342

Evaluation of the engineering geological conditions of permafrost in the section of Xiao Nanchuan-Kunlun Mountain Pass of the Qinghai-Xizang Highway.

Wang, S.L., Li, S.D., Quanguo dongtu xueshu huiyi taolunwen xuanji (Chinese National Conference on Permafrost, 3rd, Harbin, China, Aug. 19-24, 1986. Proceedings), Beijing, Kexue chubanshe (Science Press), 1989, p.10-15, In Chinese. 5 refs.

Permafrost surveys, Permafrost beneath roads, Permafrost distribution, Permafrost thickness, Highway planning, China—Kunlun Mountain Pass

50-1343

Underground water of permafrost area in Da Hinggan Ling.

Zheng, Q.P., Quanguo dongtu xueshu huiyi taolunwen xuanji (Chinese National Conference on Permafrost, 3rd, Harbin, China, Aug. 19-24, 1986. Proceedings), Beijing, Kexue chubanshe (Science Press), 1989, p.16-21, In Chinese.

Permafrost distribution, Permafrost thickness, Permafrost hydrology, Suprapermafrost ground water, Subpermafrost ground water, Hydrogeochemistry, China—Greater Khingan Range

50-1344

Hydrogeological characteristics of permafrost at the Huolapen basin in Da Hinggan Ling.

Lin, F.T., Tu, G.Z., Quanguo dongtu xueshu huiyi taolunwen xuanji (Chinese National Conference on Permafrost, 3rd, Harbin, China, Aug. 19-24, 1986. Proceedings), Beijing, Kexue chubanshe (Science Press), 1989, p.22-28, In Chinese.

Permafrost distribution, Permafrost thickness, Permafrost hydrology, Subpermafrost ground water, Suprapermafrost ground water, Soil water migration, Hydrogeology, China—Greater Khingan Range

50-1345

Basic types of underground water in permafrost area on the Qinghai-Xizang Plateau.

Guo, P.F., Quanguo dongtu xueshu huiyi taolunwen xuanji (Chinese National Conference on Permafrost, 3rd, Harbin, China, Aug. 19-24, 1986. Proceedings), Beijing, Kexue chubanshe (Science Press), 1989, p.29-36, In Chinese. 5 refs.

Permafrost hydrology, Subpermafrost ground water, Suprapermafrost ground water, Hydrogeochemistry, Hydrogeology, China—Qinghai-Xizang Plateau

50-1346

Hinggan pine vegetation and variation of the ecological environment of permafrost in northeast China.

Lu, G.W., Quanguo dongtu xueshu huiyi taolunwen xuanji (Chinese National Conference on Permafrost, 3rd, Harbin, China, Aug. 19-24, 1986. Proceedings), Beijing, Kexue chubanshe (Science Press), 1989, p.37-42, In Chinese. 5 refs.

Permafrost distribution, Permafrost indicators, Vegetation patterns, Plant ecology, Forest lines, Trees (plants), Biogeography, China—Greater Khingan Range

50-1347

Ecological characteristics of forest plants and its utilization in the Da Hinggan Ling permafrost region.

Yang, K.C., Quanguo dongtu xueshu huiyi taolunwen xuanji (Chinese National Conference on Permafrost, 3rd, Harbin, China, Aug. 19-24, 1986. Proceedings), Beijing, Kexue chubanshe (Science Press), 1989, p.43-47, In Chinese.

Permafrost distribution, Plant ecology, Vegetation patterns, China—Greater Khingan Range

50-1348

Change of permafrost at the Fenghuo Mountain on the Qinghai-Xizang Plateau.

Zhang, T.J., Zhou, Y.W., Quanguo dongtu xueshu huiyi taolunwen xuanji (Chinese National Conference on Permafrost, 3rd, Harbin, China, Aug. 19-24, 1986. Proceedings), Beijing, Kexue chubanshe (Science Press), 1989, p.48-53, In Chinese. 7 refs.

Permafrost surveys, Permafrost thickness, Permafrost thermal properties, Permafrost heat balance, Active layer, Thaw depth, Permafrost forecasting, China—Hoh Xil Mountains

50-1349

Degenerating permafrost in Da Hinggan Ling.

Yuan, H.Y., Quanguo dongtu xueshu huiyi taolunwen xuanji (Chinese National Conference on Permafrost, 3rd, Harbin, China, Aug. 19-24, 1986. Proceedings), Beijing, Kexue chubanshe (Science Press), 1989, p.54-58, In Chinese. 1 ref.

Permafrost surveys, Permafrost distribution, Permafrost thickness, Ground thawing, Human factors, China—Greater Khingan Range

50-1350

On the thermodynamic base for the stability of frozen soil system.

Ding, D.W., Quanguo dongtu xueshu huiyi taolunwen xuanji (Chinese National Conference on Permafrost, 3rd, Harbin, China, Aug. 19-24, 1986. Proceedings), Beijing, Kexue chubanshe (Science Press), 1989, p.59-64, In Chinese. 6 refs.

Soil freezing, Frozen ground thermodynamics, Frozen ground strength

50-1351

Compilation of the map of seasonal frozen depth in Jilin Province at 1:2,000,000.

Zhang, X., Li, Y.R., Song, Z.Y., Quanguo dongtu xueshu huiyi taolunwen xuanji (Chinese National Conference on Permafrost, 3rd, Harbin, China, Aug. 19-24, 1986. Proceedings), Beijing, Kexue chubanshe (Science Press), 1989, p.65-71, In Chinese. 3 refs.

Permafrost surveys, Permafrost thickness, Soil freezing, Frost penetration, Frost forecasting, Seasonal freeze thaw, Maps, China—Jilin Province

50-1352

Relationship between flux and freezing depth of soil during freezing period—for instance of the Wujiabao hydrometric station in Heilongjiang Province.

Liu, F.S., Quanguo dongtu xueshu huiyi taolunwen xuanji (Chinese National Conference on Permafrost, 3rd, Harbin, China, Aug. 19-24, 1986. Proceedings), Beijing, Kexue chubanshe (Science Press), 1989, p.72-77, In Chinese.

River flow, Soil freezing, Frost penetration, China—Heilongjiang Province

50-1353

Physical process and cryogeneous texture of soil during freezing.

Wang, J.C., Liu, J.M., Quanguo dongtu xueshu huiyi taolunwen xuanji (Chinese National Conference on Permafrost, 3rd, Harbin, China, Aug. 19-24, 1986. Proceedings), Beijing, Kexue chubanshe (Science Press), 1989, p.78-84, In Chinese. 1 ref.

Soil freezing, Frost heave, Frozen ground thermodynamics, Frozen ground strength, Soil structure

50-1354

Frost denudation landforms at the hinterland on the Qinghai-Xizang Plateau.

Zhang, W.X., Xu, S.Y., Shi, S.R., Chen, F.H., Quanguo dongtu xueshu huiyi taolunwen xuanji (Chinese National Conference on Permafrost, 3rd, Harbin, China, Aug. 19-24, 1986. Proceedings), Beijing, Kexue chubanshe (Science Press), 1989, p.85-88, In Chinese. 4 refs.

Altiplanation, Terraces, Periglacial processes, Solifluction, Geomorphology, China—Qinghai-Xizang Plateau

50-1355

Study on rock glaciers and other periglacial processes at the area of Tianshan glacial station.

Cui, Z.J., Zhu, C., Quanguo dongtu xueshu huiyi taolunwen xuanji (Chinese National Conference on Permafrost, 3rd, Harbin, China, Aug. 19-24, 1986. Proceedings), Beijing, Kexue chubanshe (Science Press), 1989, p.89-98, In Chinese. 5 refs.

Glacier surveys, Rock glaciers, Periglacial processes, China—Tian Shan

50-1356

Application of air photo to the analysis of ground ice.

Liang, F.X., Wang, Z.W., Quanguo dongtu xueshu huiyi taolunwen xuanji (Chinese National Conference on Permafrost, 3rd, Harbin, China, Aug. 19-24, 1986. Proceedings), Beijing, Kexue chubanshe (Science Press), 1989, p.99-104, In Chinese. 4 refs.

Permafrost surveys, Permafrost indicators, Ground ice, Aerial surveys, Photointerpretation, Terrain identification

50-1357

Boundary of permafrost region in east China during last glacial epoch.

Xu, S.Y., Xu, D.F., Pan, B.T., Quanguo dongtu xueshu huiyi taolunwen xuanji (Chinese National Conference on Permafrost, 3rd, Harbin, China, Aug. 19-24, 1986. Proceedings), Beijing, Kexue chubanshe (Science Press), 1989, p.105-113, In Chinese. 19 refs.

Periglacial processes, Permafrost distribution, Permafrost indicators, Soil dating, Geomorphology, Paleoclimatology, Paleoecology, China

50-1358

Condition of palaeo-temperature and the distinguishing of last glacial epoch in northern China.

Sun, J.Z., Li, X.G., Quanguo dongtu xueshu huiyi taolunwen xuanji (Chinese National Conference on Permafrost, 3rd, Harbin, China, Aug. 19-24, 1986. Proceedings), Beijing, Kexue chubanshe (Science Press), 1989, p.114-121, In Chinese. 22 refs.

Glaciation, Periglacial processes, Paleobotany, Paleoecology, Paleoclimatology, China

50-1359

Hydraulic properties and frost susceptibility of unsaturated soil.

Chen, X.B., Wang, Y.Q., Quanguo dongtu xueshu huiyi taolunwen xuanji (Chinese National Conference on Permafrost, 3rd, Harbin, China, Aug. 19-24, 1986. Proceedings), Beijing, Kexue chubanshe (Science Press), 1989, p.124-129, In Chinese. 3 refs.

Soil freezing, Frost heave, Frozen ground strength, Frozen ground thermodynamics, Soil water migration

50-1360

Statistical analysis on frost heaving behaviour of foundation soil of water conservancy structures in seasonal frozen ground region.

Wang, J.G., Xie, Y.Q., Quanguo dongtu xueshu huiyi taolunwen xuanji (Chinese National Conference on Permafrost, 3rd, Harbin, China, Aug. 19-24, 1986. Proceedings), Beijing, Kexue chubanshe (Science Press), 1989, p.130-134, In Chinese.

Hydraulic structures, Subgrade soils, Soil freezing, Frost heave, Frozen ground strength, Statistical analysis

50-1361

On frost heaving distribution along depth in seasonal frozen ground region.

Zhu, Q., Fu, S.N., Wang, Z.J., Wu, F.X., Huang, J.L., Quanguo dongtu xueshu huiyi taolunwen xuanji (Chinese National Conference on Permafrost, 3rd, Harbin, China, Aug. 19-24, 1986. Proceedings), Beijing, Kexue chubanshe (Science Press), 1989, p.135-140, In Chinese. 1 ref.

Channels (waterways), Banks (waterways), Soil freezing, Frost heave, Frost penetration, Soil water, China—Gansu Province

50-1362

Study on tangential frost heaving forces on the reinforced concrete bridge pile foundation.

Dai, H.M., Tian, D.T., Sui, X.Z., Quanguo dongtu xueshu huiyi taolunwen xuanji (Chinese National Conference on Permafrost, 3rd, Harbin, China, Aug. 19-24, 1986. Proceedings), Beijing, Kexue chubanshe (Science Press), 1989, p.141-149, In Chinese. 3 refs.

Soil freezing, Frost heave, Soil pressure, Bridges, Piers, Pile load tests

50-1363

Tangential frost heaving forces and examination of anti-frost uplift of reinforced concrete piles.

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Concrete piles, Pile load tests, Foundations, Soil freezing, Frost heave, Soil pressure, Frost resistance, Frost protection

50-1364

Test standard and design value of normal frost heaving force.

Tong, C.J., Yu, C.Y., Sun, W.M., Quanguo dongtu xueshu huiyi taolunwen xuanji (Chinese National Conference on Permafrost, 3rd, Harbin, China, Aug. 19-24, 1986. Proceedings), Beijing, Kexue chubanshe (Science Press), 1989, p.157-160, In Chinese. 2 refs.

Soil freezing, Frost heave, Soil pressure, Soil tests, Frozen ground strength, Foundations

50-1365

Study on horizontal frost heaving force of retaining wall in seasonal frozen ground region.

Sui, T.L., Na, W.J., Quanguo dongtu xueshu huiyi taolunwen xuanji (Chinese National Conference on Permafrost, 3rd, Harbin, China, Aug. 19-24, 1986. Proceedings), Beijing, Kexue chubanshe (Science Press), 1989, p.161-168, In Chinese.

Soil freezing, Frost heave, Soil pressure, Frozen ground strength, Soil stabilization, Walls

50-1366

Calculating method of frost heaving reaction in seasonal frozen ground region.

Zhou, Y.C., Quanguo dongtu xueshu huiyi taolunwen xuanji (Chinese National Conference on Permafrost, 3rd, Harbin, China, Aug. 19-24, 1986. Proceedings), Beijing, Kexue chubanshe (Science Press), 1989, p.167-174, In Chinese. 1 ref.

Soil freezing, Frost heave, Soil pressure, Frost protection, Frost resistance, Frozen ground compression, Frozen ground strength, Pile load tests, Mathematical models

50-1367

Frost heaving force on foundations in seasonal frozen ground region.

Xu, S.X., Quanguo dongtu xueshu huiyi taolunwen xuanji (Chinese National Conference on Permafrost, 3rd, Harbin, China, Aug. 19-24, 1986. Proceedings), Beijing, Kexue chubanshe (Science Press), 1989, p.175-178, In Chinese. 1 ref.

Soil freezing, Frost heave, Soil pressure, Foundations, Pile load tests

50-1368

Triaxial compressive strength of frozen soil under constant deformation rates.

Zhu, Y.L., Carbee, D.L., MP 3716, Quanguo dongtu xueshu huiyi taolunwen xuanji (Chinese National Conference on Permafrost, 3rd, Harbin, China, Aug. 19-24, 1986. Proceedings), Beijing, Kexue chubanshe (Science Press), 1989, p.179-187, In Chinese. 8 refs. For an English version see 42-4204.

Soil freezing, Frozen ground strength, Frozen ground compression, Soil creep, Soil tests

50-1369

Creep and strength behaviour of frozen swelling clayey soils.

Zhang, J.M., Zhang, J.Y., Quanguo dongtu xueshu huiyi taolunwen xuanji (Chinese National Conference on Permafrost, 3rd, Harbin, China, Aug. 19-24, 1986. Proceedings), Beijing, Kexue chubanshe (Science Press), 1989, p.188-192, In Chinese. 1 ref.

Clay soils, Soil freezing, Frost heave, Frozen ground strength, Frozen ground compression, Soil creep

50-1370

Tensile adfreezing strength between frozen soil and foundation.

Ding, J.K., Lou, A.J., Yang, X.Q., Quanguo dongtu xueshu huiyi taolunwen xuanji (Chinese National Conference on Permafrost, 3rd, Harbin, China, Aug. 19-24, 1986. Proceedings), Beijing, Kexue chubanshe (Science Press), 1989, p.193-197, In Chinese. 3 refs.

Foundations, Soil freezing, Subgrade soils, Frost resistance, Ice adhesion, Frozen ground strength

50-1371

Freezing temperature of soil and unfrozen water content in frozen soil.

Tao, Z.X., Wang, Y.J., Lin, J.F., Quanguo dongtu xueshu huiyi taolunwen xuanji (Chinese National Conference on Permafrost, 3rd, Harbin, China, Aug. 19-24, 1986. Proceedings), Beijing, Kexue chubanshe (Science Press), 1989, p.198-203, In Chinese. 2 refs.

Soil freezing, Frozen ground temperature, Frozen ground thermodynamics, Freezing points, Unfrozen water content

50-1372

Study on characteristics of moisture migration in saturated freezing soil.

Xu, X.Z., Deng, Y.S., Wang, J.C., Liu, J.M., Quanguo dongtu xueshu huiyi taolunwen xuanji (Chinese National Conference on Permafrost, 3rd, Harbin, China, Aug. 19-24, 1986. Proceedings), Beijing, Kexue chubanshe (Science Press), 1989, p.204-210, In Chinese.

Soil freezing, Soil water migration, Frozen ground thermodynamics

50-1373

On the direction of soluble salt migration during freezing.

Qiu, G.Q., Sheng, W.K., Huang, C.L., Zeng, A.W., Quanguo dongtu xueshu huiyi taolunwen xuanji (Chinese National Conference on Permafrost, 3rd, Harbin, China, Aug. 19-24, 1986. Proceedings), Beijing, Kexue chubanshe (Science Press), 1989, p.211-217, In Chinese. 5 refs.

Saline soils, Soil freezing, Frozen ground thermodynamics, Frozen ground chemistry

50-1374

Method for determining the thickness of insulation layer of foundation.

Ding, D.W., Ye, B.Y., Lanzhou Institute of Glaciology and Geocryology. Ministry of Railways, Northwest Institute. Heilongjiang Provincial Institute of Water Conservancy. Working Group for Thermal Insulation of Foundations, Quanguo dongtu xueshu huiyi taolunwen xuanji (Chinese National Conference on Permafrost, 3rd, Harbin, China, Aug. 19-24, 1986. Proceedings), Beijing, Kexue chubanshe (Science Press), 1989, p.218-224, In Chinese. 3 refs.

Foundations, Thermal insulation, Soil freezing, Frozen ground thermodynamics, Frost protection, Soil stabilization

50-1375

Numerical simulation of critical height of embankment with double layer and two dimensional phase change problem.

An, W.D., Wu, Z.W., Quanguo dongtu xueshu huiyi taolunwen xuanji (Chinese National Conference on Permafrost, 3rd, Harbin, China, Aug. 19-24, 1986. Proceedings), Beijing, Kexue chubanshe (Science Press), 1989, p.225-231, In Chinese. 4 refs.

Permafrost beneath roads, Embankments, Soil freezing, Frozen ground thermodynamics, Frost protection, Road maintenance, Mathematical models

50-1376

Approximate solutions to phase-change problems.

Li, S.X., Quanguo dongtu xueshu huiyi taolunwen xuanji (Chinese National Conference on Permafrost, 3rd, Harbin, China, Aug. 19-24, 1986. Proceedings), Beijing, Kexue chubanshe (Science Press), 1989, p.232-241, In Chinese. 3 refs.

Soil freezing, Freezing front, Frozen ground thermodynamics, Phase transformations, Heat transfer, Mathematical models

50-1377

Thaw settlement of seasonally frozen soil.

Cheng, E.Y., Jiang, H.J., Quanguo dongtu xueshu huiyi taolunwen xuanji (Chinese National Conference on Permafrost, 3rd, Harbin, China, Aug. 19-24, 1986. Proceedings), Beijing, Kexue chubanshe (Science Press), 1989, p.242-246, In Chinese. 2 refs.

Ground thawing, Frozen ground thermodynamics, Frozen ground settling, Thaw consolidation

50-1378

Engineering behavior of frozen swelling soils.

Wu, Z.W., Zhang, J.Y., Zhang, C.Q., Quanguo dongtu xueshu huiyi taolunwen xuanji (Chinese National Conference on Permafrost, 3rd, Harbin, China, Aug. 19-24, 1986. Proceedings), Beijing, Kexue chubanshe (Science Press), 1989, p.247-252, In Chinese. 3 refs.

Soil freezing, Frost heave, Frozen ground thermodynamics, Frozen ground strength

50-1379

Development and application of a low temperature triaxial testing apparatus.

Zhang, C.Q., Quanguo dongtu xueshu huiyi taolunwen xuanji (Chinese National Conference on Permafrost, 3rd, Harbin, China, Aug. 19-24, 1986. Proceedings), Beijing, Kexue chubanshe (Science Press), 1989, p.253-260, In Chinese. 5 refs.

Frozen ground strength, Frozen ground compression, Soil tests, Strain measuring instruments

50-1380

Data acquisition system with high accuracy for frozen soil testing.

Wu, B.J., Zhang, X.Z., Quanguo dongtu xueshu huiyi taolunwen xuanji (Chinese National Conference on Permafrost, 3rd, Harbin, China, Aug. 19-24, 1986. Proceedings), Beijing, Kexue chubanshe (Science Press), 1989, p.261-263, In Chinese.

Frozen ground strength, Soil tests, Computer applications

50-1381

Calculation of the minimum buried depth of building foundations in consideration of frost susceptibility of subsoil.

Jiang, H.J., Cheng, E.Y., Quanguo dongtu xueshu huiyi taolunwen xuanji (Chinese National Conference on Permafrost, 3rd, Harbin, China, Aug. 19-24, 1986. Proceedings), Beijing, Kexue chubanshe (Science Press), 1989, p.266-271, In Chinese.

Buildings, Foundations, Subgrade soils, Soil freezing, Frost heave, Frost protection

50-1382

Frost heaving force of heated buildings.

Liu, H.X., Quanguo dongtu xueshu huiyi taolunwen xuanji (Chinese National Conference on Permafrost, 3rd, Harbin, China, Aug. 19-24, 1986. Proceedings), Beijing, Kexue chubanshe (Science Press), 1989, p.272-277, In Chinese. 1 ref.

Buildings, Heating, Soil freezing, Frost heave, Frost protection, Cold weather construction

50-1383

Influence of heating on the frozen depth of building foundation.

Hong, Y.P., Jiang, H.J., Quanguo dongtu xueshu huiyi taolunwen xuanji (Chinese National Conference on Permafrost, 3rd, Harbin, China, Aug. 19-24, 1986. Proceedings), Beijing, Kexue chubanshe (Science Press), 1989, p.278-282, In Chinese.

Buildings, Heating, Foundations, Soil freezing, Frost heave, Frost protection

50-1384

Frost damage of enclosing wall and its preventing measures.

Wang, G.S., Quanguo dongtu xueshu huiyi taolunwen xuanji (Chinese National Conference on Permafrost, 3rd, Harbin, China, Aug. 19-24, 1986. Proceedings), Beijing, Kexue chubanshe (Science Press), 1989, p.283-288, In Chinese.

Walls, Frost heave, Frost action, Frost protection, Cold weather construction

50-1385

Study and application of strong tamping to prevent frost heave.

Han, H.G., Guo, M.Z., Tang, X.B., Quanguo dongtu xueshu huiyi taolunwen xuanji (Chinese National Conference on Permafrost, 3rd, Harbin, China, Aug. 19-24, 1986. Proceedings), Beijing, Kexue chubanshe (Science Press), 1989, p.289-293, In Chinese.

Subgrade soils, Frost heave, Soil compaction, Soil stabilization, Frost protection

50-1386

Experiments of shallow-buried water supply pipes.

Meng, F.J., Quanguo dongtu xueshu huiyi taolunwen xuanji (Chinese National Conference on Permafrost, 3rd, Harbin, China, Aug. 19-24, 1986. Proceedings), Beijing, Kexue chubanshe (Science Press), 1989, p.294-297, In Chinese.

Water pipelines, Underground pipelines, Pipeline freezing, Frost protection, Ice prevention

50-1387

Anti-frost behaviour of concrete lined canal with different structures.

Song, B.Q., Fan, X.T., Sun, K.H., Quanguo dongtu xueshu huiyi taolunwen xuanji (Chinese National Conference on Permafrost, 3rd, Harbin, China, Aug. 19-24, 1986. Proceedings), Beijing, Kexue chubanshe (Science Press), 1989, p.298-305, In Chinese.

Channels (waterways), Linings, Bank protection (waterways), Frost heave, Frost protection, Soil stabilization

50-1388

Frost characteristic of saline soil and its effect on canals.

Feng, T., Quanguo dongtu xueshu huiyi taolunwen xuanji (Chinese National Conference on Permafrost, 3rd, Harbin, China, Aug. 19-24, 1986. Proceedings), Beijing, Kexue chubanshe (Science Press), 1989, p.306-313, In Chinese. 4 refs.

Channels (waterways), Saline soils, Soil freezing, Frozen ground chemistry, Frost heave, Frost action, Unfrozen water content, Soil water migration

50-1389

Frost heave and frost heave force of large U-shaped and concrete lined canals.

Li, A.G., Quanguo dongtu xueshu huiyi taolunwen xuanji (Chinese National Conference on Permafrost, 3rd, Harbin, China, Aug. 19-24, 1986. Proceedings), Beijing, Kexue chubanshe (Science Press), 1989, p.314-322, In Chinese.

Channels (waterways), Linings, Soil freezing, Frost heave, Frost protection

50-1390

Study and engineering practice of enclosed foundation of sluice.

Yu, B.F., Qu, X.M., Jin, N.C., Quanguo dongtu xueshu huiyi taolunwen xuanji (Chinese National Conference on Permafrost, 3rd, Harbin, China, Aug. 19-24, 1986. Proceedings), Beijing, Kexue chubanshe (Science Press), 1989, p.323-327, In Chinese.

Channels (waterways), Hydraulic structures, Subgrade soils, Soil freezing, Frost heave, Frost protection, Soil stabilization

50-1391

Engineering classification of frost susceptibility of foundation soil of water conservancy structure in seasonal frozen ground region.

Xie, Y.Q., Wang, J.G., Yan, W.J., Quanguo dongtu xueshu huiyi taolunwen xuanji (Chinese National Conference on Permafrost, 3rd, Harbin, China, Aug. 19-24, 1986. Proceedings), Beijing, Kexue chubanshe (Science Press), 1989, p.328-332, In Chinese. 2 refs.

Hydraulic structures, Subgrade soils, Soil freezing, Frost heave, Frost resistance, Frost penetration

50-1392

Forecasting of deformation of asphalt paved frozen roadbed of the Qinghai-Xizang Highway.

Wu, Z.W., Liu, Y.Z., Quanguo dongtu xueshu huiyi taolunwen xuanji (Chinese National Conference on Permafrost, 3rd, Harbin, China, Aug. 19-24, 1986. Proceedings), Beijing, Kexue chubanshe (Science Press), 1989, p.333-338, In Chinese. 4 refs.

Roadbeds, Subgrade soils, Pavements, Permafrost beneath roads, Frost action, Frost heave, Frozen ground settling, Road maintenance, Highway planning, China—Qinghai-Xizang Plateau

50-1393

Calculation of the critical height of asphalt-paved embankment of the Qinghai-Xizang Highway.

Zhu, L.N., Wang, G.R., Guo, X.M., Quanguo dongtu xueshu huiyi taolunwen xuanji (Chinese National Conference on Permafrost, 3rd, Harbin, China, Aug. 19-24, 1986. Proceedings), Beijing, Kexue chubanshe (Science Press), 1989, p.339-346, In Chinese. 6 refs.

Embankments, Pavements, Permafrost beneath roads, Frost protection, Road maintenance, Highway planning, China—Qinghai-Xizang Plateau

50-1394

Cracking of asphalt pavement and its prevention.

Tian, D.T., Dai, H.M., Quanguo dongtu xueshu huiyi taolunwen xuanji (Chinese National Conference on Permafrost, 3rd, Harbin, China, Aug. 19-24, 1986. Proceedings), Beijing, Kexue chubanshe (Science Press), 1989, p.347-352, In Chinese.

Pavements, Road icing, Frost action, Frost protection, Road maintenance

50-1395

Sliding of the slope of railway embankment in permafrost region and its treatment.

Wang, W.B., Quanguo dongtu xueshu huiyi taolunwen xuanji (Chinese National Conference on Permafrost, 3rd, Harbin, China, Aug. 19-24, 1986. Proceedings), Beijing, Kexue chubanshe (Science Press), 1989, p.353-358, In Chinese.

Railroads, Embankments, Permafrost beneath roads, Solifluction, Frost protection, Road maintenance, China—Heilongjiang Province

50-1396
Model test of ground temperature variation of embankment.
Ye, B.Y., Tong, Z.Q., Lou, A.J., Shang, J.H., Quanguo dongtu xueshu huiyi taolunwen xuanji (Chinese National Conference on Permafrost, 3rd, Harbin, China, Aug. 19-24, 1986. Proceedings), Beijing, Kexue chubanshe (Science Press), 1989, p.359-368, In Chinese. 1 ref.
Embankments, Subgrade soils, Soil freezing, Frozen ground temperature, Ground thawing, Thaw depth, Road maintenance, Highway planning, Environmental tests, Mathematical models

50-1397
Preliminary study on the calculation of deformation of frozen wall.
Mi, H.Z., Quanguo dongtu xueshu huiyi taolunwen xuanji (Chinese National Conference on Permafrost, 3rd, Harbin, China, Aug. 19-24, 1986. Proceedings), Beijing, Kexue chubanshe (Science Press), 1989, p.369-374, In Chinese. 4 refs.
Shaft sinking, Soil freezing, Artificial freezing, Frozen ground strength, Frozen ground compression, Soil stabilization, Walls, Mathematical models

50-1398
Stress calculation of frozen wall with viscoelastic plastic theory.
Lou, G.D., Quanguo dongtu xueshu huiyi taolunwen xuanji (Chinese National Conference on Permafrost, 3rd, Harbin, China, Aug. 19-24, 1986. Proceedings), Beijing, Kexue chubanshe (Science Press), 1989, p.375-380, In Chinese.
Shaft sinking, Soil freezing, Artificial freezing, Frozen ground strength, Soil stabilization, Mathematical models

50-1399
Two new methods for calculating temperature field of freezing wall—using the deforming mesh finite element system and the separating point of distortion.
Fu, L.D., Gao, X.W., Quanguo dongtu xueshu huiyi taolunwen xuanji (Chinese National Conference on Permafrost, 3rd, Harbin, China, Aug. 19-24, 1986. Proceedings), Beijing, Kexue chubanshe (Science Press), 1989, p.381-394, In Chinese. 8 refs.
Soil freezing, Artificial freezing, Frozen ground temperature, Frozen ground thermodynamics, Frozen ground strength, Soil stabilization, Walls, Mathematical models

50-1400
Mathematical model of the variation of freezing wall with double-circle of freezing pipes and its numerical calculation.
Gao, M., Quanguo dongtu xueshu huiyi taolunwen xuanji (Chinese National Conference on Permafrost, 3rd, Harbin, China, Aug. 19-24, 1986. Proceedings), Beijing, Kexue chubanshe (Science Press), 1989, p.395-399, In Chinese. 3 refs.
Soil freezing, Artificial freezing, Frozen ground thermodynamics, Frozen ground strength, Soil stabilization, Walls, Pipes (tubes), Mathematical models

50-1401
Geometry of heat and mass transfer in dry snow: a review of theory and experiment.
Arons, E.M., Colbeck, S.C., MP 3717, *Reviews of geophysics*, Nov. 1995, 33(4), p.463-493, Refs. p.490-493.
Snow physics, Physical properties, Microstructure, Porosity, Metamorphism (snow), Classifications, Terminology, Heat transfer coefficient, Mass transfer, Snow thermal properties
A century ago, Maxwell and Rayleigh each modeled the physical properties of aggregate materials as discrete spheres embedded in continuous matrices. Although the particles of interest in snow are not spheres and do have interconnections, these basic models give first-order predictions of the thermal conductivity. In the last 3 decades, scientists have attempted to make the predictions more precise by determining the effect of geometry on heat and mass flow using basic physical models and data collected from images of planar sections of aggregates. Under favorable circumstances, physical parameters and quantitative microscopic parameters of an aggregate may be highly correlated, but physical understandings of the geometric effects are not likely to arise from such studies until physical models can be based on measurable fundamental parameters. In snow, as in other aggregates, that goal seems remote.

50-1402
Monitoring winter hydrologic characteristics of lakes by microwave radiometry.
Bordonskiĭ, G.S., Krylov, S.D., *Mapping sciences and remote sensing*, Jan.-Mar. 1995, 32(1), p.1-8, Translated from Geografiia i prirodnye resursy. 11 refs.
Limnology, Lake ice, Thermal radiation, Ice surveys, Remote sensing, Aerial surveys, Radiometry, Brightness, Gas inclusions

50-1403
Microbiological activity in thermoglacial karst springs, South Spitsbergen.
Lauritzen, S.E., Bottrell, S., *Geomicrobiology*, July-Sep. 1994, 12(3), p.161-173, 27 refs.
Hot springs, Thermokarst, Glacial hydrology, Meltwater, Subglacial drainage, Sedimentation, Subpermafrost ground water, Microbiology, Bacteria, Ecology, Hydrogeochemistry, Norway—Spitsbergen

50-1404
Snowpack influences on geomorphic processes in Green Lakes Valley, Colorado Front Range.
Caine, N., *Geographical journal*, Mar. 1995, 161(1), p.55-68, 62 refs.
Alpine landscapes, Snow cover stability, Topographic effects, Nivation, Snow cover effect, Snow hydrology, Geomorphology, Meltwater, Sediment transport, United States—Colorado—Green Lakes Valley

50-1405
Supercooled liquids.
Mohanty, U., Advances in chemical physics. Vol.89, New York, John Wiley & Sons, 1995, p.89-158, 319 refs.
DLC QD453.A27
Liquid cooling, Supercooling, Thermodynamics, Molecular energy levels, Theories, Phase transformations, Fluid dynamics, Analysis (mathematics), Temperature effects

50-1406
Interpretation of the impedance spectroscopy of cement paste via computer modelling. Part 3—microstructural analysis of frozen cement paste.
Olson, R.A., et al, *Journal of materials science*, Oct. 15, 1995, 30(20), p.5078-5086, 31 refs.
Cement admixtures, Frozen liquids, Porous materials, Microstructure, Dielectric properties, Electrical measurement, Spectroscopy, Hydrates, Freeze thaw cycles, Freezing points, Temperature effects

50-1407
Concertina eskers, Brúarjökull, Iceland: an indicator of surge-type glacier behavior.
Knudsen, O., *Quaternary science reviews*, June 1995, 14(5), p.487-493, 17 refs.
Glacial geology, Glacial hydrology, Sediment transport, Subglacial drainage, Moraines, Deformation, Geomorphology, Glacier surges, Iceland—Brúarjökull

50-1408
Meteorites as surface exposure time markers on the blue ice fields of Antarctica: episodic ice flow in Victoria Land over the last 300,000 years.
Benoit, P.H., *Quaternary science reviews*, June 1995, 14(5), p.531-540, 47 refs.
Ice sheets, Glacier surfaces, Sediments, Satellites (natural), Sediment transport, Glacier flow, Geochronology, Pleistocene, Photochemical reactions, Correlation, Antarctica—Allan Hills
It is possible to estimate how long antarctic meteorites have been on Earth by using cosmogenic radionuclide abundances and how long they have been exposed on the ice surface using natural thermoluminescence (TL) levels. This paper discusses two methods to determine surface exposure ages for antarctic meteorite finds; one method assumes an initial TL level and average surface exposure temperature while the other method uses multiple samples from a single meteorite and assumes a temperature gradient across the meteorite. The former method does not work for approximately 15% of meteorites which were heated prior to Earth impact. These data suggest that no meteorite in the current study was exposed on the ice surface for more than 300,000 years, which may imply that the blue ice fields in question were not stable platforms prior to this point in time or that a rapid pulse in ice thickness cleared the field of meteorites. Steps in surface exposure ages suggest that accumulation of meteorites on the ice fields has been episodic over the last 300,000 years, although these episodes have been of lesser magnitude than that at about 300,000 years ago. (Auth. mod.)

50-1409
Experimental pressure studies on frost heave mechanisms and the growth-fusion behavior of ice in soils and in glaciers.
Radd, F.J., Oertle, D.H., Continental Oil Company. Research and Development Department. Report No.515-4-2-66, Ponca City, Continental Oil Company, Apr. 1966, 40p., 23 refs.
Geocryology, Frost heave, Soil compaction, Frozen ground mechanics, Mechanical tests, High pressure tests, Ice growth, Ice lenses, Ice water interface, Phase transformations, Freezing front, Thermodynamics

50-1410
Steep latitudinal gradient of solar ultraviolet-B radiation in the arctic-alpine life zone.
Caldwell, M.M., Robberecht, R., Billings, W.D., *Ecology*, June 1980, 61(3), p.600-611, 23 refs.
Plant ecology, Phenology, Arctic landscapes, Alpine landscapes, Ultraviolet radiation, Insolation, Light effects, Radiance, Ozone, Atmospheric density

50-1411
Environmental loading studies for the CSA Offshore Structures Code.
Allyn, N., Yee, S., Isaacson, M., Foschi, R.O., Environmental Studies Research Funds Report. No.131, Calgary, Jan. 1995, 86p., With French summary. 18 refs.
Offshore structures, Concrete structures, Standards, Ice solid interface, Icebergs, Ice loads, Water waves, Impact strength, Computerized simulation, Computer programs, Statistical analysis, Design criteria

50-1412
Remote sensing ice detection capabilities—East Coast.
Rossiter, J.R., et al, Environmental Studies Research Fund Report. No.132, Calgary, Apr. 1995, 173p., With French summary. Refs. p.149-155.
Sea ice distribution, Remote sensing, Ice detection, Sensors, Performance, Radar photography, Underwater acoustics, Ice navigation

50-1413
Gulf Canada probabilistic ice load model: operation and parametric sensitivity study.
Watson, D.A., Timco, G.W., National Research Council, Canada. Technical report No.HYD-TR-001, Montreal, Sep. 1995, 82p. + appends., With French summary. 8 refs.
Oceanography, Sea ice, Ice solid interface, Offshore structures, Ice floes, Ice loads, Ice mechanics, Fracture zones, Mathematical models, Computer programs, Design criteria, Forecasting

50-1414
Determination of liquid water altitudes using combined remote sensors.
Politovich, M.K., Stankov, B.B., Martner, B.E., *Journal of applied meteorology*, Sep. 1995, 34(9), p.2060-2075, 41 refs.
Cloud physics, Remote sensing, Water content, Supercooled clouds, Sounding, Height finding, Radiometry, Profiles, Icing, Ice forecasting

50-1416
Reactivity of $ClONO_2$ on $H_2{}^{18}O$ ice and organic liquids.
Hanson, D.R., *Journal of physical chemistry*, Aug. 31, 1995, 99(35), p.13,059-13,061, 21 refs.
Cloud physics, Polar stratospheric clouds, Aerosols, Simulation, Ice vapor interface, Heterogeneous nucleation, Chemical properties
In experimental simulation of polar stratospheric cloud dynamics, the reactive uptake of $ClONO_2$ onto ^{18}O-labeled ice and onto organic liquids was measured in a cylindrical flow tube reactor using chemical ionization detection. The hydrolysis of $ClONO_2$ on $H_2{}^{18}O$ ice produced primarily $H^{18}OCl$, indicating that the Cl-ONO_2 bond is broken upon hydrolysis on ice. The loss of $ClONO_2$ onto liquid organic surfaces (ethylene glycol, cyclohexanone, decanol, and tridecane) was found to be efficient (reaction probability >0.06), and the product HNO_3 was detected in the gas phase. This suggests that dissociation or ionization are not prerequisites for heterogeneous reactions of $ClONO_2$. (Auth. mod.)

50-1417

Derivation of total ozone abundance and cloud effects from spectral irradiance measurements.

Stamnes, K.H., Slusser, J., Bowen, M., *Applied optics*, Oct. 20, 1991, 30(30), p.4418-4426, 25 refs.

Ozone, Clouds (meteorology), Spectra, Ultraviolet radiation, Computerized simulation, Antarctica—McMurdo Station

The authors describe a method to infer total ozone abundance and effective cloud transmission from global (diffuse plus direct) spectral irradiance measurements taken at the Earth's surface. The derivation of total ozone abundance relies on the comparison of measured irradiance ratios at two wavelengths in the UV part of the spectrum with a synthetic chart of this ratio computed for a variety of ozone abundances. The method presented here was applied for determining ozone abundance and cloud attenuation from the global irradiance measurements taken at McMurdo Station during the 1988-89 season. (Auth. mod.)

50-1418

Swedish Antarctic Research Programme, 1989/90: a cruise report.

Reuterskioeld, M., Stockholm, Swedish Polar Research Secretariat, 1992, 44p., PB95-222154, Refs. passim.

Cold weather construction, Low temperature research, Wind factors, Glaciology, Logistics, Glacial geology, Plankton, Antarctica—Wasa Station, Antarctica—Victoria Land

The cruise report from the Swedish Antarctic Research Programme (SWEDARP 89-90) covers the continuation of the field work carried out in 1988-89. The expedition's destination was the Nordenskioeld Base where the Finnish Aboa and the Swedish Wasa Stations were established in 1988-89. (Auth.)

50-1419

Swedish building research in Antarctica.

Swedish Council for Building Research, *Swedish Council for Building Research. Report*, 1992, D14, 14p., PB95-222477.

Low temperature research, Cold weather construction, Water treatment, Waste treatment, Diesel engines, Fuels, Environmental protection, Antarctica—Wasa Station

This document describes building construction practices at the Swedish research station Wasa in Queen Maud Land. There is also a discussion of other issues, such as waste management, water consumption, solar power and diesel fuel usage, building reliability, and environmental protection. (Auth.)

50-1420

World of snow and ice. [Mir snega i l'da]

Kotliakov, V.M., Moscow, Nauka, 1994, 285p., In Russian. Refs. p.284-285.

Mountain glaciers, Ice water interface, Ice conditions, Sea ice, Ground ice, River ice, Antarctica, United States—Alaska, Russia, China

This work deals with the characteristics of snow and ice phenomena, the history of their development and their significance in the lives of people. For the past 30 years the author has travelled to ice and snow covered regions of the world, including Antarctica. His experiences, possible routes to follow through these regions, and problems associated with the various routes are discussed. (Auth. mod.)

50-1421

Japan-China Joint Study on Desertification (JC-JOSDES). Phase I: FY1989-FY1992. Annual report, April 1990-March 1991. [Sabakuka kiko no kaimei ni kansuru kokusai kyodo kenkyu seika hokokusho]

Japan. Science and Technology Agency. Research and Development Bureau (Kagaku gijutsucho Kenkyu kaihatsukyoku), Kagaku gijutsu shinko choseihi sogo kenkyu (Coordination Funds for Promoting Science and Technology. Comprehensive studies), Tokyo, Sep. 1991, 264p., In Japanese with English table of contents. Refs. passim. For individual papers see 50-1422 through 50-1442.

DLC GB611.S22 1991 Orien Japan

Deserts, Desert soils, Eolian soils, Soil conservation, Wind erosion, Desiccation, Land reclamation, Plant ecology, Vegetation patterns, China

50-1422

Outline of the study plan in Phase I.

Japan. Science and Technology Agency. Research and Development Bureau, Sabakuka kiko no kaimei ni kansuru kokusai kyodo kenkyu seika hokokusho (Japan-China Joint Study on Desertification. Annual report, Apr. 1990-Mar. 1991), Tokyo, Japan. Science and Technology Agency. Research and Development Bureau (Kagaku gijutsucho Kenkyu kaihatsukyoku), Sep. 1991, p.3-23, In Japanese and English.

Deserts, Desert soils, Eolian soils, Soil conservation, Desiccation, Plant ecology, Paleoclimatology, Research projects, Cost analysis, China—Taklimakan Desert

50-1423

Studies on the formation of the desert. Paleoenvironmental analysis for desert and lake deposits.

Endo, K., et al, Sabakuka kiko no kaimei ni kansuru kokusai kyodo kenkyu seika hokokusho (Japan-China Joint Study on Desertification. Annual report, Apr. 1990-Mar. 1991), Tokyo, Japan. Science and Technology Agency. Research and Development Bureau (Kagaku gijutsucho Kenkyu kaihatsukyoku), Sep. 1991, p.27-60, In Japanese with English summary. 10 refs.

Deserts, Desert soils, Eolian soils, Lacustrine deposits, Quaternary deposits, Soil dating, Desiccation, Paleoecology, Paleoclimatology, China—Taklimakan Desert

50-1424

Studies on the formation of the desert. Analyses of ice cores from surrounding glaciers.

Nakawo, M., Sabakuka kiko no kaimei ni kansuru kokusai kyodo kenkyu seika hokokusho (Japan-China Joint Study on Desertification. Annual report, Apr. 1990-Mar. 1991), Tokyo, Japan. Science and Technology Agency. Research and Development Bureau (Kagaku gijutsucho Kenkyu kaihatsukyoku), Sep. 1991, p.61-65, In Japanese with English summary.

Mountain glaciers, Ice cores, Ice composition, Deserts, Desiccation, Paleoclimatology, China—Taklimakan Desert

50-1425

Studies on the desertification. Studies on the changes of the surface condition in the desert. Distribution and physical properties of surface materials.

Sugihara, S., Sabakuka kiko no kaimei ni kansuru kokusai kyodo kenkyu seika hokokusho (Japan-China Joint Study on Desertification. Annual report, Apr. 1990-Mar. 1991), Tokyo, Japan. Science and Technology Agency. Research and Development Bureau (Kagaku gijutsucho Kenkyu kaihatsukyoku), Sep. 1991, p.66-72, In Japanese with English summary.

Deserts, Desert soils, Soil surveys, Aerial surveys, Spaceborne photography, Radiometry, China—Taklimakan Desert

50-1426

Investigation of the surface condition in Taklimakan Desert.

Tsuchiya, K., Ishiyama, T., Sabakuka kiko no kaimei ni kansuru kokusai kyodo kenkyu seika hokokusho (Japan-China Joint Study on Desertification. Annual report, Apr. 1990-Mar. 1991), Tokyo, Japan. Science and Technology Agency. Research and Development Bureau (Kagaku gijutsucho Kenkyu kaihatsukyoku), Sep. 1991, p.73-89, In Japanese with English summary.

Deserts, Desert soils, Soil surveys, Soil temperature, Terrain identification, Vegetation patterns, Air temperature, Humidity, Aerial surveys, Spaceborne photography, Radio echo soundings, China—Taklimakan Desert

50-1427

Studies on the desertification. Studies on the changes of the surface condition in the desert. Mapping of land use state.

Sugihara, S., Sabakuka kiko no kaimei ni kansuru kokusai kyodo kenkyu seika hokokusho (Japan-China Joint Study on Desertification. Annual report, Apr. 1990-Mar. 1991), Tokyo, Japan. Science and Technology Agency. Research and Development Bureau (Kagaku gijutsucho Kenkyu kaihatsukyoku), Sep. 1991, p.90-101, In Japanese with English summary.

Deserts, Desert soils, Soil mapping, Vegetation patterns, Terrain identification, Land development, China—Taklimakan Desert

50-1428

Studies on the desertification. Studies on the formation of geological features in the desert. Mineralogical and chemical analysis for geologic sample in the desert areas.

Ishii, T., et al, Sabakuka kiko no kaimei ni kansuru kokusai kyodo kenkyu seika hokokusho (Japan-China Joint Study on Desertification. Annual report, Apr. 1990-Mar. 1991), Tokyo, Japan. Science and Technology Agency. Research and Development Bureau (Kagaku gijutsucho Kenkyu kaihatsukyoku), Sep. 1991, p.102-113, In Japanese with English summary. 6 refs.

Deserts, Desert soils, Soil surveys, Soil analysis, Soil chemistry, Mineralogy, Geochemistry, China—Taklimakan Desert

50-1429

Studies on the desertification. Studies on the formation of geological features in the desert. Studies on the salt precipitation and accumulation in the desert area.

Okada, A., Yabuki, S., Sabakuka kiko no kaimei ni kansuru kokusai kyodo kenkyu seika hokokusho (Japan-China Joint Study on Desertification. Annual report, Apr. 1990-Mar. 1991), Tokyo, Japan. Science and Technology Agency. Research and Development Bureau (Kagaku gijutsucho Kenkyu kaihatsukyoku), Sep. 1991, p.114-130, In Japanese with English summary. 7 refs.

Deserts, Desert soils, Saline soils, Soil chemistry, Mineralogy, China—Taklimakan Desert

50-1430

Studies on transportation of sand particles and accumulation in the desert. Measurements of atmospheric dust and sand profiles.

Itabe, T., Shibata, T., Sabakuka kiko no kaimei ni kansuru kokusai kyodo kenkyu seika hokokusho (Japan-China Joint Study on Desertification. Annual report, Apr. 1990-Mar. 1991), Tokyo, Japan. Science and Technology Agency. Research and Development Bureau (Kagaku gijutsucho Kenkyu kaihatsukyoku), Sep. 1991, p.131-133, In Japanese with English summary. 5 refs.

Desert soils, Atmospheric circulation, Atmospheric composition, Air pollution, Dust, Lidar, China—Taklimakan Desert

50-1431

Studies on the desertification. Studies on transportation of sand particles and accumulation in the desert area. Investigation of sand-dune shifting by wind.

Nagashima, H., Sabakuka kiko no kaimei ni kansuru kokusai kyodo kenkyu seika hokokusho (Japan-China Joint Study on Desertification. Annual report, Apr. 1990-Mar. 1991), Tokyo, Japan. Science and Technology Agency. Research and Development Bureau (Kagaku gijutsucho Kenkyu kaihatsukyoku), Sep. 1991, p.134-144, In Japanese with English summary. 2 refs.

Deserts, Desert soils, Eolian soils, Sands, Wind erosion, Particle size distribution, China—Taklimakan Desert

50-1432

Studies on the desertification. Studies on transportation of sand particles and accumulation in the desert area. Investigation in sand-dune shifting by wind.

Okumura, T., Akagi, S., Sabakuka kiko no kaimei ni kansuru kokusai kyodo kenkyu seika hokokusho (Japan-China Joint Study on Desertification. Annual report, Apr. 1990-Mar. 1991), Tokyo, Japan. Science and Technology Agency. Research and Development Bureau (Kagaku gijutsucho Kenkyu kaihatsukyoku), Sep. 1991, p.145-157, In Japanese with English summary. 4 refs.

Deserts, Desert soils, Eolian soils, Sands, Wind erosion, Mineralogy, Particle size distribution, China—Taklimakan Desert

50-1433

Studies on the desertification. Studies on transportation of sand particles and accumulation in the desert area. Three dimensional measurement of terrain points based on stereo satellite.

Nagashima, H., Sabakuka kiko no kaimei ni kansuru kokusai kyodo kenkyu seika hokokusho (Japan-China Joint Study on Desertification. Annual report, Apr. 1990-Mar. 1991), Tokyo, Japan. Science and Technology Agency. Research and Development Bureau (Kagaku gijutsucho Kenkyu kaihatsukyoku), Sep. 1991, p.158-165, In Japanese with English summary. 2 refs.

Deserts, Desert soils, Eolian soils, Sands, Wind erosion, Stereophotography, Spaceborne photography, China—Taklimakan Desert

50-1434

Studies on the desertification. Studies on hydrological characteristics in the desert. Investigation on the water balances in the desert area.

Kimura, T., Yonetani, T., Sabakuka kiko no kaimei ni kansuru kokusai kyodo kenkyu seika hokokusho (Japan-China Joint Study on Desertification. Annual report, Apr. 1990-Mar. 1991), Tokyo, Japan. Science and Technology Agency. Research and Development Bureau (Kagaku gijutsucho Kenkyu kaihatsukyoku), Sep. 1991, p.166-169, In Japanese.

Deserts, Desiccation, Water balance, China—Taklimakan Desert

50-1435

Studies on the desertification. Studies on hydrological characteristics in the desert. Research on the origin of water, based on isotopic analyses.

Ushiki, H., Takahashi, K., Masuda, A., Sabakuka kiko no kaimei ni kansuru kokusai kyodo kenkyu seika hokokusho (Japan-China Joint Study on Desertification. Annual report, Apr. 1990-Mar. 1991), Tokyo, Japan. Science and Technology Agency. Research and Development Bureau (Kagaku gijutsucho Kenkyu kaihatsukyoku), Sep. 1991, p.170-181, In Japanese with English summary. 1 ref.

Deserts, Desert soils, Snowmelt, Meltwater, Ground water, Hydrogeochemistry, Water chemistry, Isotope analysis, China—Taklimakan Desert

50-1436

Studies on the desertification. Studies on hydrological characteristics in the desert. Research on the soil moisture characteristics.

Fujitani, T., Mikami, M., Sabakuka kiko no kaimei ni kansuru kokusai kyodo kenkyu seika hokokusho (Japan-China Joint Study on Desertification. Annual report, Apr. 1990-Mar. 1991), Tokyo, Japan. Science and Technology Agency. Research and Development Bureau (Kagaku gijutsucho Kenkyu kaihatsukyoku), Sep. 1991, p.182-187, In Japanese with English summary. 1 ref.

Deserts, Desert soils, Soil water, Water balance, Moisture meters, China—Taklimakan Desert

50-1437

Studies on the relationship between desertification and climatic change. Collection and analyses on historical data.

Yoshino, M., Kawamura, T., Yasunari, T., Kai, K., Sabakuka kiko no kaimei ni kansuru kokusai kyodo kenkyu seika hokokusho (Japan-China Joint Study on Desertification. Annual report, Apr. 1990-Mar. 1991), Tokyo, Japan. Science and Technology Agency. Research and Development Bureau (Kagaku gijutsucho Kenkyu kaihatsukyoku), Sep. 1991, p.188-191, In Japanese with English summary. 1 ref.

Deserts, Desiccation, Climatic changes, Global change

50-1438

Studies on the relationship between desertification and climate change. Observational and numerical studies of land-surface interactions.

Fujitani, T., Mikami, M., Aoki, T., Aoki, T., Fukabori, M., Sabakuka kiko no kaimei ni kansuru kokusai kyodo kenkyu seika hokokusho (Japan-China Joint Study on Desertification. Annual report, Apr. 1990-Mar. 1991), Tokyo, Japan. Science and Technology Agency. Research and Development Bureau (Kagaku gijutsucho Kenkyu kaihatsukyoku), Sep. 1991, p.192-199, In Japanese with English summary. 3 refs.

Deserts, Desiccation, Climatic changes, Weather stations, Meteorological instruments

50-1439

Studies on the physical and ecological environments of plant over semi-arid area. Classification of plant communities in semi-arid area.

Tanimoto, T., Saito, M., Sabakuka kiko no kaimei ni kansuru kokusai kyodo kenkyu seika hokokusho (Japan-China Joint Study on Desertification. Annual report, Apr. 1990-Mar. 1991), Tokyo, Japan. Science and Technology Agency. Research and Development Bureau (Kagaku gijutsucho Kenkyu kaihatsukyoku), Sep. 1991, p.202-214, In Japanese with English summary. 5 refs.

Deserts, Desiccation, Climatic changes, Plant ecology, Vegetation patterns, China—Xinjiang

50-1440

Studies on the maintenance and the restoration mechanisms of grassland ecosystems in semi-arid regions. Observational study on micro-meteorology and eco-physiological investigations of plant communities.

Nemoto, M., Sabakuka kiko no kaimei ni kansuru kokusai kyodo kenkyu seika hokokusho (Japan-China Joint Study on Desertification. Annual report, Apr. 1990-Mar. 1991), Tokyo, Japan. Science and Technology Agency. Research and Development Bureau (Kagaku gijutsucho Kenkyu kaihatsukyoku), Sep. 1991, p.215-224, In Japanese with English summary. 16 refs.

Steppes, Soil conservation, Land reclamation, Revegetation, Plant ecology, Protective vegetation, Vegetation patterns, Grasses, China—Inner Mongolia

50-1441

Studies on the physical and ecological environments of plant over semi-arid area. Studies on the mechanism of pedogenesis and vegetation in the desert area.

Hatta, T., Sabakuka kiko no kaimei ni kansuru kokusai kyodo kenkyu seika hokokusho (Japan-China Joint Study on Desertification. Annual report, Apr. 1990-Mar. 1991), Tokyo, Japan. Science and Technology Agency. Research and Development Bureau (Kagaku gijutsucho Kenkyu kaihatsukyoku), Sep. 1991, p.225-235, In Japanese with English summary. 10 refs.

Desert soils, Soil formation, Soil erosion, Weathering, Plant ecology, Vegetation factors, China—Inner Mongolia

50-1442

Physico-ecological studies on drought and salt resistance of plants under controlled environments.

Omasa, K., et al, Sabakuka kiko no kaimei ni kansuru kokusai kyodo kenkyu seika hokokusho (Japan-China Joint Study on Desertification. Annual report, Apr. 1990-Mar. 1991), Tokyo, Japan. Science and Technology Agency. Research and Development Bureau (Kagaku gijutsucho Kenkyu kaihatsukyoku), Sep. 1991, p.236-245, In Japanese with English summary. 14 refs.

Deserts, Steppes, Desert soils, Saline soils, Soil conservation, Land reclamation, Plant ecology, Plant physiology, Revegetation, Protective vegetation, Vegetation patterns, China

50-1443

Arctic ice cap shrinking.

Lange, G., *Deutscher Forschungsdienst. Special science reports,* Nov. 1993, IX(11), p.6-7.

Ice sheets, Ablation, Ice melting, Climatic changes

50-1444

Hailstorms in Switzerland: left movers, right movers, and false hooks.

Houze, R.A., Jr., Schmid, W., Fovell, R.G., Schiesser, H.H., *Monthly weather review,* Dec. 1993, 121(12), p.3345-3370, 41 refs.

Precipitation (meteorology), Thunderstorms, Structural analysis, Hail, Sounding, Radar echoes, Fronts (meteorology), Air flow, Wind direction, Turbulent boundary layer, Mathematical models, Switzerland

50-1445

Model of the glass transition.

Mansfield, M.L., *Journal of chemical physics,* Nov. 8, 1995, 103(18), p.8124-8129, 53 refs.

Liquid cooling, Supercooling, Phase transformations, Thermodynamics, Relaxation (mechanics), Enthalpy, Temperature effects, Mathematical models

50-1446

Comparison of second-order classifiers for SAR sea ice discrimination.

Barber, D.G., Shokr, M.E., Fernandes, R.A., Soulis, E.D., Flett, D.G., LeDrew, E.F., *Photogrammetric engineering & remote sensing,* Sep. 1993, 59(9), p.1397-1408, 47 refs.

Sea ice distribution, Ice surveys, Ice conditions, Ice detection, Classifications, Spaceborne photography, Synthetic aperture radar, Image processing, Statistical analysis

50-1447

Characterizing multitemporal alpine snowmelt patterns for ecological inferences.

Allen, T.R., Walsh, S.J., *Photogrammetric engineering & remote sensing,* Oct. 1993, 59(10), p.1521-1529, 37 refs.

Remote sensing, Alpine landscapes, Spaceborne photography, LANDSAT, Snow hydrology, Snowmelt, Snow cover distribution, Snow cover effect, Forest lines, Ecosystems, Image processing, Statistical analysis, United States—Montana—Glacier National Park

50-1448

Accuracy of SPOT digital elevation model and derivatives: utility for Alaska's North Slope.

Sasowsky, K.C., Petersen, G.W., Evans, B.M., *Photogrammetric engineering & remote sensing,* June 1992, 58(6), p.815-824, 45 refs.

Photogrammetry, Spaceborne photography, Stereomapping, Topographic surveys, Terrain identification, Subarctic landscapes, Height finding, Ground thawing, Active layer, Thickness, Forecasting, Seasonal variations, United States—Alaska

50-1449

Canadian contribution to the Paleoclimate Model Intercomparison Project (PMIP).

Jetté, H., *Géographie physique et Quaternaire,* 1995, 49(1), p.4-12, With French and German summaries. 35 refs.

Paleoclimatology, Paleoecology, Climatic changes, Global change, Global warming, Forecasting, Simulation, Canada

50-1450
Eastern Canadian Arctic at ca. 6 ka BP: a time of transition.
Williams, K.M., Short, S.K., Andrews, J.T., Jennings, A.E., Mode, W.N., Syvitski, J.P.M., *Géographie physique et Quaternaire,* 1995, 49(1), p.13-27, With French and German summaries. 63 refs.
Paleoclimatology, Climatic changes, Global warming, Oceanography, Paleoecology, Sedimentation, Stratigraphy, Quaternary deposits, Marine deposits, Ocean currents, Geochronology, Sea ice distribution, Isostasy, Correlation, Canada

50-1451
Paleovegetation and paleoclimatic changes in the Yukon at 6 ka BP.
Cwynar, L.C., Spear, R.W., *Géographie physique et Quaternaire,* 1995, 49(1), p.29-35, With French and German summaries. 17 refs.
Paleoclimatology, Paleoecology, Paleobotany, Forest ecosystems, Tundra soils, Climatic changes, Cooling, Vegetation patterns, Palynology, Canada—Yukon Territory

50-1452
Vegetation of the continental Northwest Territories at 6 ka BP.
MacDonald, G.M., *Géographie physique et Quaternaire,* 1995, 49(1), p.37-43, With French and German summaries. 34 refs.
Paleoecology, Paleobotany, Lacustrine deposits, Peat, Vegetation patterns, Palynology, Forest lines, Tundra vegetation, Canada—Northwest Territories

50-1453
Permafrost distribution in peatlands of west-central Canada during the Holocene warm period 6000 years BP.
Zoltai, S.C., *Géographie physique et Quaternaire,* 1995, 49(1), p.45-54, With French and German summaries. 43 refs.
Paleoecology, Paleoclimatology, Permafrost distribution, Permafrost transformation, Peat. Soil analysis, Coring, Radioactive age determination, Canada

50-1454
British Columbia vegetation and climate history with focus on 6 ka BP.
Hebda, R.J., *Géographie physique et Quaternaire,* 1995, 49(1), p.55-79, With French and German summaries. 71 refs.
Paleoclimatology. Climatic changes, Paleobotany, Paleoecology, Palynology, Vegetation patterns, Correlation, Canada—British Columbia

50-1455
Paleoecological record of 6 ka BP climate in the Canadian prairie provinces.
Vance, R.E., Beaudoin, A.B., Luckman, B.H., *Géographie physique et Quaternaire,* 1995, 49(1), p.81-98, With French and German summaries. Refs. p.95-98.
Paleoecology, Paleoclimatology, Climatic changes, Plains, Forest ecosystems, Vegetation patterns, Forest lines, Canada—Alberta, Canada—Saskatchewan, Canada—Manitoba, Canada—Ontario

50-1456
Forest changes in the Great Lakes region at 5-7 ka BP.
Anderson, T.W., *Géographie physique et Quaternaire,* 1995, 49(1), p.99-116, With French and German summaries. Refs. p.113-116.
Forest ecosystems, Watersheds, Climatic changes, Paleoecology, Paleobotany, Lacustrine deposits, Palynology, Stratigraphy, Vegetation patterns, Periodic variations, Canada—Great Lakes

50-1457
Vegetation cover of Québec-Labrador 6000 years BP: an essay. [Le couvert végétal du Québec-Labrador il y a 6000 ans BP: essai]
Richard, P.J.H., *Géographie physique et Quaternaire,* 1995, 49(1), p.117-140, In French with English and German summaries. Refs. p.136-140.
Paleoecology, Paleobotany, Vegetation patterns, Palynology, Classifications, Biogeography, Mapping, Tundra terrain, Forest lines, Climatic factors, Canada—Quebec, Canada—Labrador

50-1458
Vegetation and climate of maritime Canada 6000 years BP: a synthesis.
Jetté, H., Mott, R.J., *Géographie physique et Quaternaire,* 1995, 49(1), p.141-162, With French and German summaries. 40 refs.
Paleoecology, Paleoclimatology, Forest ecosystems, Classifications, Maps, Paleobotany, Palynology, Vegetation patterns, Geochronology, Marine atmospheres, Canada—New Brunswick, Canada—Nova Scotia

50-1459
6 ka BP reconstruction for the island of Newfoundland from a synthesis of Holocene lake-sediment pollen records.
Macpherson, J.B., *Géographie physique et Quaternaire,* 1995, 49(1), p.163-182, With French and German summaries. 56 refs.
Paleoclimatology, Global warming, Paleoecology, Palynology, Forest ecosystems, Vegetation patterns, Classifications, Geochronology, Climatic changes, Correlation, Canada—Newfoundland

50-1460
Periphytic diatom assemblages from high arctic ponds.
Douglas, M.S.V., Smol, J.P., *Journal of phycology,* Feb. 1995, 31(1), p.60-69, 40 refs.
Limnology, Ponds, Sediments, Water chemistry, Sampling, Algae, Plant ecology, Plankton, Biomass, Ecosystems, Classifications, Canada—Northwest Territories—Ellesmere Island

50-1461
Prewhitening for improved detection by matched-field processing in ice-ridging correlated noise.
Zala, C.A., Ozard, J.M., Wilmut, M.J., *Acoustical Society of America. Journal,* Nov. 1995, 98(5)pt.1, p.2726-2734, 26 refs.
Oceanography, Sea ice, Ice acoustics, Underwater acoustics, Pressure ridges, Sound transmission, Wave propagation, Detection, Data processing, Statistical analysis, Accuracy, Simulation

50-1462
Cold acclimation of *Arabidopsis thaliana.*
Uemura, M., Joseph, R.A., Steponkus, P.L., *Plant physiology,* Sep. 1995, 109(1), p.15-30, 51 refs.
Plant physiology, Acclimatization, Cold tolerance, Frost resistance, Plant tissues, Freezing, Damage, Electron microscopy, Cold weather tests

50-1463
Laboratory infrared spectra (2.3-23μm) of SO_2 phases: applications to Io surface analysis.
Nash, D.B., Betts, B.H., *Icarus,* Oct. 1995, 117(2), p.402-419, 52 refs.
Satellites (natural), Regolith, Extraterrestrial ice, Frost, Simulation, Gases, Ice physics, Ice spectroscopy, Infrared spectroscopy, Spectra, Reflectivity

50-1464
Radioactive heating of porous comet nuclei.
Prialnik, D., Podolak, M., *Icarus,* Oct. 1995, 117(2), p.420-430, 32 refs.
Extraterrestrial ice, Porous materials, Cosmic dust, Amorphous ice, Ice physics, Ice sublimation, Phase transformations, Radioactivity, Heating, Thermal conductivity, Mathematical models

50-1465
Effect of electroporation on intracellular ice formation in rye leaf protoplasts.
Chandrasekaran, M., Pitt, R.E., Anesbansley, D.J., Parks, J.E., *Cryobiology,* Oct. 1995, 32(5), p.461-476, 45 refs.
Cryobiology, Plant tissues, Liquid cooling, Permeability, Ice formation, Electric fields, Acclimatization, Statistical analysis, Temperature effects

50-1466
Frost resistance of roller-compacted high-volume fly ash concrete.
Pigeon, M., Malhotra, V.M., *Journal of materials in civil engineering,* Nov. 1995, 7(4), p.208-211, 8 refs.
Concrete aggregates, Concrete admixtures, Concrete durability, Frost resistance, Freeze thaw tests, Air entrainment, Compaction, Design criteria, Physical properties

50-1467
Photolysis and pyrolysis of europium compounds in solid and frozen solution systems: Mössbauer and ESR study.
Yamauchi, S., Minai, Y., Watanabe, T., Tominaga, T., *Radiochimica acta,* 1993, 61(3-4), p.227-233, 21 refs.
Solutions, Frozen liquids, Photochemical reactions, Ice spectroscopy, Gamma irradiation, Radiation absorption, Electron paramagnetic resonance, Spectra, Ion density (concentration)

50-1468
West coast Newfoundland oil spill sensitivity atlas.
Dempsey, J., Simms, A., Harper, J., Lambert, E., Hooper, R., Environmental Studies Research Funds Report. No.127, Calgary, Mar. 1995, 60p. + appends., With French summary. 39 refs.
Oil spills, Oceanography, Shores, Classifications, Geophysical surveys, Environmental impact, Countermeasures, Maps, Computer programs, Computer applications, Canada—Newfoundland

50-1469
Long-term response to factorial, NPK fertilizer treatment by Alaskan wet and moist tundra sedge species.
Shaver, G.R., Chapin, F.S., III, *Ecography,* Sep. 1995, 18(3), p.259-275, 54 refs.
Tundra vegetation, Tundra soils, Nutrient cycle, Biomass, Vegetation patterns, Environmental tests, Ecosystems, Indexes (ratios), United States—Alaska

50-1470
Identification of fossil plant fragments in glaciers. [Identifiering av fossila växtfragment i glaciärer]
Lindskog, A., Eriksen, B., *Svensk botanisk tidskrift,* 1995, 89(2), p.83-88, In Swedish with English summary. 10 refs.
Glacier ice, Plants (botany), Plant ecology, Glacial deposits, Fossils, Classifications, Ice cores, Sampling, Vegetation patterns

50-1471
Radiative properties of finite inhomogeneous cirrus clouds: Monte Carlo simulations.
Chýlek, P., Dobbie, J.S., *Journal of the atmospheric sciences,* Oct. 15, 1995, 52(20), p.3512-3522, 29 refs.
Cloud cover, Cloud physics, Optical properties, Radiance, Radiation absorption, Reflectivity, Ice crystal optics, Ice crystal size, Simulation

50-1472
In situ bioremediation in arctic Canada.
Carss, J.G., Agar, G.J., Surbey, G.E., International Symposium on In Situ and On-site Bioreclamation, 2nd, San Diego, CA, Apr., 1993. Hydrocarbon bioremediation. Edited by R.E. Hinchee et al, Boca Raton, Lewis Publishers, 1994, p.323-328.
DLC TD196.P4 H93
Limnology, Ground water, Water pollution, Hydrocarbons, Crude oil, Environmental impact, Countermeasures, Microbiology, Degradation, Canada—Northwest Territories—Great Slave Lake

50-1473
Review of bioremediation experience in Alaska.
Kellems, B.L., Leeson, A., Hinchee, R.E., International Symposium on In Situ and On-site Bioreclamation, 2nd, San Diego, CA, Apr., 1993.
Hydrocarbon bioremediation. Edited by R.E. Hinchee et al, Boca Raton, Lewis Publishers, 1994, p.438-443, 20 refs.
DLC TD196.P4 H93
Petroleum industry, Oil spills, Soil pollution, Hydrocarbons, Countermeasures, Cold weather operation, Environmental protection, Soil microbiology, Degradation, United States—Alaska

50-1474

Cold climate applications of bioventing.

Ong, S.K., et al, International Symposium on In Situ and On-site Bioreclamation, 2nd, San Diego, CA, Apr., 1993. Hydrocarbon bioremediation. Edited by R.E. Hinchee et al, Boca Raton, Lewis Publishers, 1994, p.444-453, 3 refs.

DLC TD196.P4 H93

Soil pollution, Oil spills, Hydrocarbons, Countermeasures, Soil microbiology, Degradation, Soil temperature, Heating, Temperature control, Ventilation

50-1475

Proceedings of the first symposium on the Qinghai-Xizang Plateau. [Zhongguo Qingzang gaoyuan yanjiuhui diyijie xueshu taolunhui lunwenxuan]

China Society of Qinghai-Xizang Plateau Research, Symposium, 1st, Mar. 1990, Beijing, Kexue chubanshe (Science Press), 1992, 319p., In Chinese with English table of contents. Refs. passim. For selected papers see 50-1476 through 50-1507.

DLC GB578.7.C49 1990 Orien China

Geological surveys, Economic development, Regional planning, Exploration, Natural resources, Tectonics, Continental drift, Geochronology, Stratigraphy, China—Qinghai-Xizang Plateau

50-1476

Studies on environment and resources of the Qinghai-Xizang Plateau: retrospects and prospects.

Liu, T.S., Zhongguo Qingzang gaoyuan yanjiuhui diyijie xueshu taolunhui lunwenxuan (China Society of Qinghai-Xizang Plateau Research. Symposium, 1st, Mar. 1990. Proceedings), Beijing, Kexue chubanshe (Science Press), 1992, p.1-13, In Chinese with English summary.

Geological surveys, Exploration, Economic development, Land development, Research projects, China—Qinghai-Xizang Plateau

50-1477

Economic development strategy and regionalization of Xizang.

Ni, Z.B., Zhongguo Qingzang gaoyuan yanjiuhui diyijie xueshu taolunhui lunwenxuan (China Society of Qinghai-Xizang Plateau Research. Symposium, 1st, Mar. 1990. Proceedings), Beijing, Kexue chubanshe (Science Press), 1992, p.22-29, In Chinese with English summary. 2 refs.

Economic development, Land development, Regional planning, China—Xizang

50-1478

On strategy of exploiting resources and their performance in Qinghai Province.

Chen, Z.J., Zhongguo Qingzang gaoyuan yanjiuhui diyijie xueshu taolunhui lunwenxuan (China Society of Qinghai-Xizang Plateau Research. Symposium, 1st, Mar. 1990. Proceedings), Beijing, Kexue chubanshe (Science Press), 1992, p.30-34, In Chinese with English summary.

Economic development, Regional planning, Natural resources, China—Qinghai Province

50-1479

Analysis on the Qinghai-Xizang Plateau as a "disturbing source region" for climatic changes.

Tang, M.C., Li, C.Q., Zhongguo Qingzang gaoyuan yanjiuhui diyijie xueshu taolunhui lunwenxuan (China Society of Qinghai-Xizang Plateau Research. Symposium, 1st, Mar. 1990. Proceedings), Beijing, Kexue chubanshe (Science Press), 1992, p.42-48, In Chinese with English summary. 8 refs.

Atmospheric circulation, Air temperature, Paleoclimatology, Climatic changes, Global change, China—Qinghai-Xizang Plateau

50-1480

Perplexed questions in energy development of Qinghai-Xizang Plateau and some ideal countermeasures.

Tong, W., Zhongguo Qingzang gaoyuan yanjiuhui diyijie xueshu taolunhui lunwenxuan (China Society of Qinghai-Xizang Plateau Research. Symposium, 1st, Mar. 1990. Proceedings), Beijing, Kexue chubanshe (Science Press), 1992, p.49-56, In Chinese with English summary. 2 refs. + footnotes passim.

Electric power, Economic development, Regional planning, Cost analysis, China—Qinghai-Xizang Plateau

50-1481

Water level and balance analyses for Yamzho Hydropower Station of Xizang Autonomous Region.

Wang, Y.L., Zhongguo Qingzang gaoyuan yanjiuhui diyijie xueshu taolunhui lunwenxuan (China Society of Qinghai-Xizang Plateau Research. Symposium, 1st, Mar. 1990. Proceedings), Beijing, Kexue chubanshe (Science Press), 1992, p.57-63, In Chinese with English summary. 3 refs.

Lakes, Water level, Water balance, Water reserves, Electric power, Economic development, China—Xizang

50-1482

Utilization and protection of natural resources in the Hengduan Mountains region.

Li, M.S., Zhongguo Qingzang gaoyuan yanjiuhui diyijie xueshu taolunhui lunwenxuan (China Society of Qinghai-Xizang Plateau Research. Symposium, 1st, Mar. 1990. Proceedings), Beijing, Kexue chubanshe (Science Press), 1992, p.64-71, In Chinese with English summary. 6 refs.

Natural resources, Economic development, Environmental protection, Regional planning, China—Hengduan Mountains

50-1483

Physical environment, its utilization and conservation of the Karakoram and Kunlun Mts. region.

Zheng, D., Zhongguo Qingzang gaoyuan yanjiuhui diyijie xueshu taolunhui lunwenxuan (China Society of Qinghai-Xizang Plateau Research. Symposium, 1st, Mar. 1990. Proceedings), Beijing, Kexue chubanshe (Science Press), 1992, p.72-78, In Chinese with English summary. 10 refs.

Mountains, Plant ecology, Environmental protection, Regional planning, China—Kunlun Mountains, China—Karakoram Mountains

50-1484

Study on habitats and forest types of the altitudinal belts on the eastern and western slopes of the Mount Serkyim La.

Xu, F.X., Zhongguo Qingzang gaoyuan yanjiuhui diyijie xueshu taolunhui lunwenxuan (China Society of Qinghai-Xizang Plateau Research. Symposium, 1st, Mar. 1990. Proceedings), Beijing, Kexue chubanshe (Science Press), 1992, p.79-85, In Chinese with English summary.

Mountains, Forest ecosystems, Plant ecology, Vegetation patterns, China—Xizang

50-1485

Giving full play to the mineral resources, to promote the economic development in Xizang.

Cao, Y.G., Liu, Z.M., Zhongguo Qingzang gaoyuan yanjiuhui diyijie xueshu taolunhui lunwenxuan (China Society of Qinghai-Xizang Plateau Research. Symposium, 1st, Mar. 1990. Proceedings), Beijing, Kexue chubanshe (Science Press), 1992, p.86-90, In Chinese with English summary.

Exploration, Mining, Minerals, Natural resources, Economic development, China—Xizang

50-1486

Saline-lake resources on the Qinghai-Xizang Plateau and their developed prospect.

Zheng, M.P., Zhongguo Qingzang gaoyuan yanjiuhui diyijie xueshu taolunhui lunwenxuan (China Society of Qinghai-Xizang Plateau Research. Symposium, 1st, Mar. 1990. Proceedings), Beijing, Kexue chubanshe (Science Press), 1992, p.91-97, In Chinese with English summary. 2 refs.

Salt lakes, Lake water, Water chemistry, Hydrogeochemistry, Exploration, Minerals, Natural resources, Economic development, China—Qinghai-Xizang Plateau

50-1487

Features of potash sedimentation in the upper salt layer (S_4) in the Qarhan Salt Lake.

Li, B.X., Xu, C., Zhongguo Qingzang gaoyuan yanjiuhui diyijie xueshu taolunhui lunwenxuan (China Society of Qinghai-Xizang Plateau Research. Symposium, 1st, Mar. 1990. Proceedings), Beijing, Kexue chubanshe (Science Press), 1992, p.98-103, In Chinese with English summary. 1 ref.

Salt lakes, Lacustrine deposits, Bottom sediment, Brines, Minerals, Hydrogeochemistry, Exploration, China—Qinghai Province

50-1488

Some research advances of earth science in the Qarhan Salt Lake.

Yang, S.X., Zhongguo Qingzang gaoyuan yanjiuhui diyijie xueshu taolunhui lunwenxuan (China Society of Qinghai-Xizang Plateau Research. Symposium, 1st, Mar. 1990. Proceedings), Beijing, Kexue chubanshe (Science Press), 1992, p.104-110, In Chinese with English summary. 2 refs.

Salt lakes, Lacustrine deposits, Bottom sediment, Minerals, Hydrogeochemistry, Drill core analysis, Stratigraphy, Soil dating, China—Qinghai Province

50-1489

Glacier resources in the Karakorum-Kunlun Mts. and their utilization.

Su, Z., Zhongguo Qingzang gaoyuan yanjiuhui diyijie xueshu taolunhui lunwenxuan (China Society of Qinghai-Xizang Plateau Research. Symposium, 1st, Mar. 1990. Proceedings), Beijing, Kexue chubanshe (Science Press), 1992, p.111-116, In Chinese with English summary. 2 refs.

Mountain glaciers, Glacier surveys, Glacial hydrology, Glacial rivers, Meltwater, Water reserves, China—Kunlun Mountains, China—Karakoram Mountains

50-1490

Permafrost on the Qinghai-Xizang Plateau.

Li, S.D., Wang, S.L., Zhongguo Qingzang gaoyuan yanjiuhui diyijie xueshu taolunhui lunwenxuan (China Society of Qinghai-Xizang Plateau Research. Symposium, 1st, Mar. 1990. Proceedings), Beijing, Kexue chubanshe (Science Press), 1992, p.117-124, In Chinese with English summary. 6 refs.

Permafrost surveys, Permafrost distribution, Permafrost thickness, Frozen ground temperature, Ground ice, China—Qinghai-Xizang Plateau

50-1491

Evaluation of wheat germplasm resources in Xizang.

Huang, H.L., Zhou, R.H., Lu, P., Xu, Y., Zhongguo Qingzang gaoyuan yanjiuhui diyijie xueshu taolunhui lunwenxuan (China Society of Qinghai-Xizang Plateau Research. Symposium, 1st, Mar. 1990. Proceedings), Beijing, Kexue chubanshe (Science Press), 1992, p.170-179, In Chinese with English summary. 6 refs.

Plants (botany), Plant ecology, Introduced plants, Grasses, Acclimatization, Agriculture, China—Xizang

50-1492

Barley genetic resources and their development and utilization on the Qinghai-Xizang Plateau.

Xu, T.W., Zhongguo Qingzang gaoyuan yanjiuhui diyijie xueshu taolunhui lunwenxuan (China Society of Qinghai-Xizang Plateau Research. Symposium, 1st, Mar. 1990. Proceedings), Beijing, Kexue chubanshe (Science Press), 1992, p.180-186, In Chinese with English summary. 14 refs.

Plants (botany), Plant ecology, Introduced plants, Grasses, Acclimatization, Agriculture, China—Qinghai-Xizang Plateau

50-1493

Genetic and ecological significance of alpine debris mulch soils.

Liu, C.D., Zhongguo Qingzang gaoyuan yanjiuhui diyijie xueshu taolunhui lunwenxuan (China Society of Qinghai-Xizang Plateau Research. Symposium, 1st, Mar. 1990. Proceedings), Beijing, Kexue chubanshe (Science Press), 1992, p.213-217, In Chinese with English summary. 6 refs.

Mountain soils, Cryogenic soils, Soil formation, Soil classification, Frost weathering, Periglacial processes, China—Qinghai-Xizang Plateau

50-1494

Takyr soils and gypsic frigid desert soils in the Kunlun Mts. and the northern Qiangtang Plateau.

Gu, G.A., Zhang, L.D., Zhongguo Qingzang gaoyuan yanjiuhui diyijie xueshu taolunhui lunwenxuan (China Society of Qinghai-Xizang Plateau Research. Symposium, 1st, Mar. 1990. Proceedings), Beijing, Kexue chubanshe (Science Press), 1992, p.218-222, In Chinese with English summary. 2 refs.

Soil surveys, Mountain soils, Desert soils, Cryogenic soils, Soil composition. Soil chemistry, China—Kunlun Mountains

50-1495

Recent debris flow disaster and its prevention in east Qinghai-Xizang Plateau.

Tang, B.X., Liu, S.J., Liu, S.Q., Zhongguo Qingzang gaoyuan yanjiuhui diyijie xueshu taolunhui lunwenxuan (China Society of Qinghai-Xizang Plateau Research. Symposium, 1st, Mar. 1990. Proceedings), Beijing, Kexue chubanshe (Science Press), 1992, p.223-227, In Chinese with English summary. 3 refs.

Mudflows, Accidents, Slope stability, Slope protection, China—Qinghai-Xizang Plateau

50-1496

Climatological analysis of the snowstorm damage in Xizang.

Lin, Z.Y., Zhongguo Qingzang gaoyuan yanjiuhui diyijie xueshu taolunhui lunwenxuan (China Society of Qinghai-Xizang Plateau Research. Symposium, 1st, Mar. 1990. Proceedings), Beijing, Kexue chubanshe (Science Press), 1992, p.228-234, In Chinese with English summary. 4 refs.

Snowstorms, Snowfall, Accidents, China—Qinghai-Xizang Plateau

50-1497

Study on theoretical problems of peat resources of the Qinghai-Xizang Plateau.

Sun, G.Y., Zhongguo Qingzang gaoyuan yanjiuhui diyijie xueshu taolunhui lunwenxuan (China Society of Qinghai-Xizang Plateau Research. Symposium, 1st, Mar. 1990. Proceedings), Beijing, Kexue chubanshe (Science Press), 1992, p.235-242, In Chinese with English summary. 12 refs.

Peat, Soil surveys, Soil composition, Soil formation, Soil dating, Mineralogy, China—Qinghai-Xizang Plateau

50-1498

Geotectonic evolution of the Qinghai-Xizang Plateau.

Chang, C.F., Zhongguo Qingzang gaoyuan yanjiuhui diyijie xueshu taolunhui lunwenxuan (China Society of Qinghai-Xizang Plateau Research. Symposium, 1st, Mar. 1990. Proceedings), Beijing, Kexue chubanshe (Science Press), 1992, p.243-255, In Chinese with English summary. 46 refs.

Tectonics, Continental drift, Earth crust, Geochronology, Geomorphology, China—Qinghai-Xizang Plateau

50-1499

Intracontinental subduction zones in the Tibetan Plateau and their magmatism.

Deng, W.M., Zhongguo Qingzang gaoyuan yanjiuhui diyijie xueshu taolunhui lunwenxuan (China Society of Qinghai-Xizang Plateau Research. Symposium, 1st, Mar. 1990. Proceedings), Beijing, Kexue chubanshe (Science Press), 1992, p.256-262, In Chinese with English summary. 22 refs.

Tectonics, Continental drift, Earth crust, Magma, Geochronology, China—Qinghai-Xizang Plateau

50-1500

Tectonic features of northwestern Qinghai-Xizang Plateau—as an example: Yecheng-Shiquanhe route.

Pan, Y.S., Zhongguo Qingzang gaoyuan yanjiuhui diyijie xueshu taolunhui lunwenxuan (China Society of Qinghai-Xizang Plateau Research. Symposium, 1st, Mar. 1990. Proceedings), Beijing, Kexue chubanshe (Science Press), 1992, p.263-271, In Chinese with English summary. 31 refs.

Geological surveys, Tectonics, Geochronology, Geomorphology, Geologic structures, China—Qinghai-Xizang Plateau

50-1501

Neotectonic framework of the boundary of the Qinghai-Xizang Plateau.

Wu, X.H., Zhu, Y.Z., Zhongguo Qingzang gaoyuan yanjiuhui diyijie xueshu taolunhui lunwenxuan (China Society of Qinghai-Xizang Plateau Research. Symposium, 1st, Mar. 1990. Proceedings), Beijing, Kexue chubanshe (Science Press), 1992, p.272-279, In Chinese with English summary. 8 refs.

Geological surveys, Tectonics, Geochronology, Geomorphology, Geologic structures, China—Qinghai-Xizang Plateau

50-1502

Depositional features and the environmental significance of Cretaceous and lower Tertiary in southern Xizang.

Zhou, Z.C., Zhang, B.G., Zhongguo Qingzang gaoyuan yanjiuhui diyijie xueshu taolunhui lunwenxuan (China Society of Qinghai-Xizang Plateau Research. Symposium, 1st, Mar. 1990. Proceedings), Beijing, Kexue chubanshe (Science Press), 1992, p.280-286, In Chinese with English summary. 14 refs.

Geological surveys, Stratigraphy, Marine deposits, Geologic structures, Paleoecology, Fossils, Geochronology, China—Xizang

50-1503

Current status and problems of investigation with reference to Gondwana stratigraphy in the Qinghai-Xizang Plateau and its adjoining areas.

Yin, J.X., Zhongguo Qingzang gaoyuan yanjiuhui diyijie xueshu taolunhui lunwenxuan (China Society of Qinghai-Xizang Plateau Research. Symposium, 1st, Mar. 1990. Proceedings), Beijing, Kexue chubanshe (Science Press), 1992, p.287-295, In Chinese with English summary. 49 refs.

Geological surveys, Stratigraphy, Tectonics, Continental drift, Paleoecology, Fossils, Geochronology, China—Qinghai-Xizang Plateau

50-1504

First appearance of Himalayas and its relation to global climatic events.

Xu, Q.Q., Zhongguo Qingzang gaoyuan yanjiuhui diyijie xueshu taolunhui lunwenxuan (China Society of Qinghai-Xizang Plateau Research. Symposium, 1st, Mar. 1990. Proceedings), Beijing, Kexue chubanshe (Science Press), 1992, p.296-301, In Chinese with English summary. 31 refs.

Geological surveys, Stratigraphy, Tectonics, Continental drift, Fossils, Geochronology, Paleoecology, Paleoclimatology, Global change, Himalaya Mountains

50-1505

Double wedging model for the Qinghai-Xizang Plateau.

Zheng, J.D., Zhongguo Qingzang gaoyuan yanjiuhui diyijie xueshu taolunhui lunwenxuan (China Society of Qinghai-Xizang Plateau Research. Symposium, 1st, Mar. 1990. Proceedings), Beijing, Kexue chubanshe (Science Press), 1992, p.302-307, In Chinese with English summary. 16 refs.

Geological surveys, Tectonics, Continental drift, Volcanoes, Earthquakes, Geochronology, China—Qinghai-Xizang Plateau

50-1506

New paleontological evidence for continental drift in the Qinghai-Xizang Plateau.

Wen, S.X., Zhongguo Qingzang gaoyuan yanjiuhui diyijie xueshu taolunhui lunwenxuan (China Society of Qinghai-Xizang Plateau Research. Symposium, 1st, Mar. 1990. Proceedings), Beijing, Kexue chubanshe (Science Press), 1992, p.308-314, In Chinese with English summary. 36 refs.

Geological surveys, Tectonics, Continental drift, Stratigraphy, Fossils, Paleoecology, Paleobotany, Geochronology, China—Qinghai-Xizang Plateau

50-1507

Primary investigation on the Xinqingfeng boiling springs in Hoh Xil district, Qinghai Province.

Zheng, X.S., Zheng, J.K., Ye, J.Q., Zhongguo Qingzang gaoyuan yanjiuhui diyijie xueshu taolunhui lunwenxuan (China Society of Qinghai-Xizang Plateau Research. Symposium, 1st, Mar. 1990. Proceedings), Beijing, Kexue chubanshe (Science Press), 1992, p.315-319, In Chinese with English summary. 3 refs.

Geological surveys, Hot springs, Geothermy, Tectonics, China—Hoh Xil Mountains

50-1508

Scientific plan for a regional research programme in the Arctic on global change.

International Arctic Science Committee (IASC), Oslo, Norway, Washington, D.C., National Academy Press, 1994, 106p., Proceedings of a workshop at Reykjavik, Iceland, Apr. 22-25, 1992.

Research projects, Air ice water interaction, Polar atmospheres, Marine atmospheres, Atmospheric circulation, Atmospheric composition, Air pollution, Ice sheets, Glacial meteorology, Paleoclimatology, Global change

50-1509

Oceanic remote sensing and sea ice monitoring.

Johannessen, J.A., ed, Guymer, T.H., ed, *SPIE—The International Society for Optical Engineering*, 1994, Vol.2319, 182p., Refs. passim. For selected papers see 50-1510 through 50-1517 or F-54022, F-54023, and J-54021.

DLC GC10.4.R4O28 1994

Ice surveys, Sea ice distribution, Ice detection, Ice conditions, Ice reporting, Oceanographic surveys, Radio echo soundings, Radiometry, Synthetic aperture radar, Spaceborne photography

This book contains the proceedings of a meeting on oceanic remote sensing and sea ice monitoring held in Rome, Italy, Sep. 26, 1994. Of a total of 18 papers, 8 are pertinent to polar oceans and of those, three are explicitly pertinent to the Antarctic. The antarctic papers deal with a comparison of satellite altimetry and the FRAM (Fine Resolution Antarctic Model) of circulation in the southern ocean; SMMR (Scanning Multichannel Microwave Radiometer) and SSMI (Special Sensor Microwave Imager) satellite remote sensing of sea ice in the Arctic and Antarctic; and near real-time sea ice maps of the southern ocean from satellite remote sensing data.

50-1510

Scales of variability in the southern ocean from satellite altimetry and FRAM (Fine Resolution Antarctic Model).

Snaith, H.M., *SPIE—The International Society for Optical Engineering,* 1994, Vol.2319, Oceanic remote sensing and sea ice monitoring, Rome, Italy, Sep. 26, 1994. Edited by J.A. Johannessen and T.H. Guymer, p.19-30, 15 refs.

Oceanographic surveys, Ocean currents, Sea level, Height finding, Radio echo soundings, Spaceborne photography

Satellite altimetry and numerical models offer two methods of studying the circulation of the remote southern ocean at a range of space and time scales. Repeated tracks of satellite altimeter data from GEOSAT and ERS-1 have been used to determine characteristic length scales of oceanic mesoscale features, and the time scales of this activity, in the Agulhas Region. The results are shown and discussed in terms of the local ocean dynamics and the differences in sampling between the two satellites. The Fine Resolution Antarctic Model is a numerical model of the southern ocean, designed to resolve mesoscale features of the circulation. A six year time series of monthly model surface dynamic heights has been sampled as if by an altimeter. These "model altimeter" data have been processed using the same methods as for real altimeter data. The spatial scales of mesoscale activity in the model were determined using the same techniques as for the real altimeter data and the results compared in order to determine the ability of the model to recreate the mesoscale activity of the regions studied. (Auth.)

50-1511

Wind vector retrieval from ERS-1 synthetic aperture radar data.

Wackerman, C.C., Rufenach, C.L., Shuchman, R.A., Johannessen, J.A., *SPIE—The International Society for Optical Engineering,* 1994, Vol.2319, Oceanic remote sensing and sea ice monitoring, Rome, Italy, Sep. 26, 1994. Edited by J.A. Johannessen and T.H. Guymer, p.49-60, 10 refs.

Wind direction, Wind velocity, Marine meteorology, Atmospheric circulation, Atmospheric disturbances, Weather forecasting, Synthetic aperture radar, Spaceborne photography, Radar echoes, Image processing, Norway, Norwegian Sea

50-1512

Monitoring lead dynamics with ERS-1 synthetic aperture radar imagery.

Wackerman, C.C., Shuchman, R.A., Onstott, R.G., Fett, R.W., *SPIE—The International Society for Optical Engineering,* 1994, Vol.2319, Oceanic remote sensing and sea ice monitoring, Rome, Italy, Sep. 26, 1994. Edited by J.A. Johannessen and T.H. Guymer, p.106-113, 2 refs.

Ice surveys, Sea ice distribution, Ice openings, Ice detection, Ice growth, Ice cover thickness, Ice water interface, Synthetic aperture radar, Radio echo soundings, Radiometry, Spaceborne photography, Beaufort Sea

50-1513

Sea ice concentrations derived from SMMR and SSMI: parameter retrieval and algorithm evaluation.

Bjørgo, E., Johannessen, O.M., *SPIE—The International Society for Optical Engineering,* 1994, Vol.2319, Oceanic remote sensing and sea ice monitoring, Rome, Italy, Sep. 26, 1994. Edited by J.A. Johannessen and T.H. Guymer, p.114-125, 14 refs.

Ice surveys, Sea ice distribution, Ice conditions, Ice detection, Ice edge, Ice temperature, Radio echo soundings, Radiometry, Spaceborne photography

Satellite passive microwave sensors are the most effective means to monitor sea ice on a global scale. 18GHz horizontal and vertical and 37GHz vertical polarized brightness temperatures from the Scanning Multichannel Microwave Radiometer (SMMR) are compared to the 19GHz horizontal and vertical and 37GHz vertical polarized brightness temperatures from the Special Sensor Microwave Imager (SSMI) over the Arctic and Antarctic during the 1987 overlap period in order to merge the two time series. The Norwegian NORSEX and NASA Team multi-frequency algorithms are used on the overlapping SMMR and SSMI data sets. Sea ice extent and area are calculated and the algorithm performance is compared for both hemispheres. The NORSEX algorithm tends to give approximately 10% higher sea ice concentration values than the NASA Team algorithm. (Auth.)

50-1514

Multisensor observations of winter sea ice in the Greenland Sea.

Toudal, L., *SPIE—The International Society for Optical Engineering,* 1994, Vol.2319, Oceanic remote sensing and sea ice monitoring, Rome, Italy, Sep. 26, 1994. Edited by J.A. Johannessen and T.H. Guymer, p.126-133, 3 refs.

Ice surveys, Sea ice distribution, Ice conditions, Ice edge, Ice growth, Ice detection, Radio echo soundings, Radiometry, Synthetic aperture radar, Spaceborne photography, Greenland Sea

50-1515

Validation and evaluation of a workstation for monitoring sea ice.

McIntyre, N., Boardman, D., Darwin, D., Sullivan, K., *SPIE—The International Society for Optical Engineering,* 1994, Vol.2319, Oceanic remote sensing and sea ice monitoring, Rome, Italy, Sep. 26, 1994. Edited by J.A. Johannessen and T.H. Guymer, p.134-144, 6 refs.

Ice surveys, Sea ice distribution, Ice conditions, Ice reporting, Ice routing, Ice detection, Radio echo soundings, Spaceborne photography, Data transmission, Greenland Sea

50-1516

Assessment of a demonstration project to supply near real time sea ice information to end users.

Blackford, C., Howes, S., Whitelaw, A., Laxon, S.W., Mantripp, D.R., *SPIE—The International Society for Optical Engineering,* 1994, Vol.2319, Oceanic remote sensing and sea ice monitoring, Rome, Italy, Sep. 26, 1994. Edited by J.A. Johannessen and T.H. Guymer, p.145-154, 4 refs.

Ice surveys, Sea ice distribution, Ice detection, Ice forecasting, Ice reporting, Radio echo soundings, Spaceborne photography, Data transmission

During Mar. 1994 ESYS Limited and the University College London Mullard Space Science Laboratory (MSSL) operated a sea ice demonstration project to supply near real-time sea ice maps in the southern ocean. The sea ice information was derived from a number of data sources: DMSP SSM/I data; ERS-1 SAR and radar altimeter fast delivery data; NOAA AVHRR data; and PoSAT-1 imagery. The maps were supplied to three users, two involved in yacht races in the southern ocean and a ship on an oceanographic research cruise in the waters of the Princess Elizabeth Trough region of Antarctica. The demonstration was successful, supplying the users with sea ice information which they had previously not received and combining data from various sources to produce sea ice maps. The demonstration also developed operational skills within ESYS and enabled the transfer of knowledge from MSSL to ESYS. (Auth.)

50-1517

Operational use of NOAA-AVHRR imagery in the marine environment.

Roozekrans, H., *SPIE—The International Society for Optical Engineering,* 1994, Vol.2319, Oceanic remote sensing and sea ice monitoring, Rome, Italy, Sep. 26, 1994. Edited by J.A. Johannessen and T.H. Guymer, p.156-164, 14 refs.

Ice surveys, Sea ice distribution, Ice detection, Ice reporting, Oceanographic surveys, Algae, Suspended sediments, Spaceborne photography, North Sea, Netherlands

50-1518

Automation opportunities at Corps of Engineers locks and dams.

Carey, K.L., SR 95-21, *U.S. Army Cold Regions Research and Engineering Laboratory. Special report,* Sep. 1995, 25p., ADA-300 664.

Navigation, Locks (waterways), Dams, Computer applications

In an investigation to determine the feasibility of automating some of the operations at navigation locks and dams of the Corps of Engineers, a scheme of five categories composed of seventeen characteristics was developed to evaluate candidate automation measures. As a result of both a survey of Corps water resources projects and field visits to seven lock and dam projects, 43 navigation project functions that could be automated to varying degrees are identified and described (24 associated with lock operations, 15 associated with dam operations, and four related to navigation operations). The 43 project functions are assessed according to the evaluation scheme, and presented in a matrix format. The matrix can be used for selections, comparisons, sortings, or rankings, of the various project functions and automation alternatives. The matrix is readily adaptable to a database when and if it grows larger. Thus, an initial framework has been established for evaluating operations and functions commonly occurring at navigation locks and dams offering opportunities for automation. This framework should prove useful for operational planning and management decision-making.

50-1519

Optimal design of piping systems for district heating.

Phetteplace, G., CR 95-17, *U.S. Army Cold Regions Research and Engineering Laboratory. Report,* Aug. 1995, 93p., ADA-300 411, 44 refs.

Heat transfer, Design, Heating, Heat pipes, Computer programs, Analysis (mathematics), Cost analysis, Mathematical models

First, a method for determining the optimal size for a single pipe segment in a district heating system is developed. The method is general enough to allow for any set of economic or physical parameter values. In addition, any form of load management, i.e., temperature or flow modulation, or both, can be accommodated by the integral form of the coefficients in the cost equation. An example is presented that shows a 17% savings in life cycle costs over a design based on a common rule of thumb. Next the heat consumer and his effects on the piping system are studied. A new model is developed for the consumer's heat exchanger that uses the geometric mean temperature difference as an approximation for the logarithmic mean temperature difference. The new consumer model is integrated into the previous single pipe model and, for a sample case, its effect is determined. For systems having multiple pipes and consumers, the constraints are first developed and then the general solution strategy. The method makes use of the solution to the unconstrained problem as a starting point for the constrained solution. Monotonicity analysis is then used to prove activity of some of the constraints, and thus simplify the problem. Finally, the branch-and-bound technique is shown to be suitable for finding a design with discrete values for all the pipe diameters. A simple example is provided. A method is also demonstrated for further refinement of the pipe network to eliminate excessive throttling losses in the consumer's control valves. The method developed here should be feasible for designing the piping networks for district heating systems of moderate size, and its major advantage is its flexibility.

50-1520

Simulation of abrupt climate change induced by freshwater input to the North Atlantic Ocean.

Manabe, S., Stouffer, R.J., *Nature,* Nov. 9, 1995, 378(6553), 165-167, 21 refs.

Climatic changes, Meltwater, Fresh water, North Atlantic Ocean

50-1521

Stratospheric OClO measurements as a poor quantitative indicator of chlorine activation.

Sessler, J., Chipperfield, M.P., Pyle, J.A., Toumi, R., *Geophysical research letters,* Mar. 15, 1995, 22(6), p.687-690, 13 refs.

Atmospheric composition, Chemical composition, Stratosphere

50-1522

Climate change in mountain environments.

Willis, I., Bonvin, J.M., *Geography,* July 1995, 80(348)pt.3, p.247-261, 41 refs.

Climatology, Climatic changes, Mountain glaciers, Glacial hydrology, Glacier mass balance, Glacier melting, Snowmelt, Stream flow, Meltwater, Runoff, Water supply, Forecasting, Switzerland—Haut Glacier d'Arolla

50-1523

Freezing stress and osmotic dehydration in *Fucus distichus* (Phaeophyta): evidence for physiological similarity.

Pearson, G.A., Davison, I.R., *Journal of phycology,* Apr. 1994, 30(2), p.257-267, 45 refs.

Marine biology, Algae, Plant ecology, Plant physiology, Cold stress, Cold tolerance, Photosynthesis, Freezing, Desiccation, Temperature effects, Cold weather tests

50-1524

Evaluation of odor removal by pilot-scale biological treatment process trains during spring runoff in an ice-covered river.

Hrudey, S.E., Huck, P.M., Mitton, M.J., Kenefick, S.L., *Water science and technology,* 1995, 31(11), p.195-201, 10 refs.

Water treatment, Municipal engineering, Water supply, Surface waters, Water pollution, River ice, Ice cover effect, Runoff, Meltwater, Decomposition, Water chemistry

50-1525
Glacial geology and petrography of erratics in Shackleton Range, Antarctica.
Höfle, H.C., Buggisch, W., *Polarforschung*. 1993, 63(2-3), p.183-201, With German summary. 16 refs.
Geological surveys, Pleistocene, Geomorphology, Glacial geology, Glacier flow, Glacial erosion, Glacial deposits, Sampling, Ice solid interface, Lithology, Weathering, Antarctica—Shackleton Range

50-1526
Mesoscale and microscale structure of a severe ice pellet storm.
Hanesiak, J.M., Stewart, R.E., *Monthly weather review*, Nov. 1995, 123(11), p.3144-3162, 36 refs.
Precipitation (meteorology), Ice storms, Synoptic meteorology, Marine meteorology, Hail, Classifications, Regelation, Air temperature, Sounding, Radar echoes, Atmospheric boundary layer, Models, Weather forecasting

50-1527
Sensitivity of squall-line rear inflow to ice microphysics and environmental humidity.
Yang, M.J., Houze, R.A., Jr., *Monthly weather review*, Nov. 1995, 123(11), p.3175-3193, 57 refs.
Precipitation (meteorology), Storms, Synoptic meteorology, Cloud physics, Humidity, Air flow, Turbulent diffusion, Hailstone growth, Ice melting, Ice air interface, Classifications, Simulation, Mathematical models

50-1528
Testing the effects of a new land surface scheme and of initial soil moisture conditions in the Canadian Global Forecast Model.
Delage, Y., Verseghy, D., *Monthly weather review*, Nov. 1995, 123(11), p.3305-3317, 29 refs.
Weather forecasting, Climatology, Atmospheric boundary layer, Humidity, Global warming, Soil air interface, Soil water, Evaporation, Moisture transfer, Albedo, Snow cover effect, Models, Vegetation factors

50-1529
Explicit cloud physics parameterization for operational numerical weather prediction.
Schultz, P., *Monthly weather review*, Nov. 1995, 123(11), p.3331-3343, 39 refs.
Weather forecasting, Cloud physics, Computerized simulation, Precipitation (meteorology), Classifications, Phase transformations, Snowfall, Ice crystal growth, Hail, Ice melting, Evaporation, Ice vapor interface

50-1530
Vascular flora of Pirttimysvuoma, a tundra-like area in northern Sweden. [Pirttimysvuoma och dess kärlväxtflora]
Sjörs, H., *Svensk botanisk tidskrift*, 1995, 89(1), p.37-43, In Swedish with English summary. 5 refs.
Tundra vegetation, Plants (botany), Plant ecology, Vegetation patterns, Classifications, Frost mounds, Sweden—Pirttimysvuoma

50-1531
Proceedings. Beijing, China Meteorological Press, 1994, 376p., Refs. passim. For selected papers see 50-1532 through 50-1539.
Mountains, Geologic structures, Tectonics, Glaciation, Lacustrine deposits, Glacial hydrology, Pleistocene, Paleoclimatology, Climatic changes, Paleobotany, Glacial deposits, Stratigraphy, Correlation, China—Karakoram Mountains, China—Kunlun Mountains

50-1532
Late Pleistocene-Holocene diatom record and paleoenvironment of Bangong Lake, Western Tibet.
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Paleoecology, Paleobotany, Lacustrine deposits, Stratigraphy, Water level, Plankton, Radioactive age determination, Classifications, Paleoclimatology, Correlation, Tibet—Bangong Lake

50-1533
New findings on the ice-cover between Issyk-Kul and K2 (Tian Shan, Karakorum) during the last glaciation.
Kuhle, M., International Symposium on the Karakorum and Kunlun Mountains, Xinjiang, China, June 5-9, 1992. Proceedings. Edited by D. Zheng et al, Beijing, China Meteorological Press, 1994, p.185-197, 15 refs.
Pleistocene, Geomorphology, Paleoclimatology, Mountain glaciers, Glaciation, Moraines, Glacial geology, Glacial erosion, Lithology, Height finding, China—Karakoram Mountains

50-1534
Discussion on the Quaternary glaciations in the Karakorum-West Kunlun Mountains.
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Pleistocene, Mountain glaciers, Glaciation, Quaternary deposits, Glacial deposits, Glacier oscillation, Snow line, Tectonics, China—Karakoram Mountains

50-1535
Floods resulting from glacial lake outbursts, Yrqiang River basin, Xinjiang, China.
Li, J., Reeves, R.W., Wang, Y.X., Baker, V.R., International Symposium on the Karakorum and Kunlun Mountains, Xinjiang, China, June 5-9, 1992. Proceedings. Edited by D. Zheng et al, Beijing, China Meteorological Press, 1994, p.207-213, 5 refs.
Mountain glaciers, Glacial hydrology, Glacial lakes, Lake bursts, River basins, River flow, Flooding, Flood forecasting, Spaceborne photography, Periodic variations, China—Yarkant River

50-1536
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Li, J.Y., Zhang, Q.S., Li, S.K., International Symposium on the Karakorum and Kunlun Mountains, Xinjiang, China, June 5-9, 1992. Proceedings. Edited by D. Zheng et al, Beijing, China Meteorological Press, 1994, p.214-222, 17 refs.
Paleoclimatology, Climatic changes, Quaternary deposits, Lacustrine deposits, Stratigraphy, Paleoecology, Plankton, Classifications, Correlation, China—A'shekulie Lake

50-1537
Ostracod fauna and its paleogeographic significance of the past 17,000 years in the Karakorum and West Kunlun Mountains region.
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Lacustrine deposits, Pleistocene, Quaternary deposits, Paleoecology, Stratigraphy, Paleoclimatology, Climatic changes, Radioactive age determination, Correlation, China—Karakoram Mountains

50-1538
Physical and geochemical characteristics of the existing glaciers on the northern slope of Mt. Qogir, Karakorum.
Qin, D.H., Xie, Z.C., Thwaites, R.J., Wen, Q.B., International Symposium on the Karakorum and Kunlun Mountains, Xinjiang, China, June 5-9, 1992. Proceedings. Edited by D. Zheng et al, Beijing, China Meteorological Press, 1994, p.248-257, 6 refs.
Glaciology, Mountain glaciers, Glacier surveys, Glacier oscillation, Ice cores, Sampling, Geochemistry, Oxygen isotopes, Isotope analysis, China—Karakoram Mountains

50-1539
Distribution and environmental significance of Quaternary deposits at the foot of the West Kunlun Mountains in Yecheng of Xinjiang.
Zhu, L.P., International Symposium on the Karakorum and Kunlun Mountains, Xinjiang, China, June 5-9, 1992. Proceedings. Edited by D. Zheng et al, Beijing, China Meteorological Press, 1994, p.291-301, 14 refs.
Quaternary deposits, Pleistocene, Gravel, Sands, Tectonics, Tectonics, Lithology, Grain size, China—Kunlun Mountains

50-1540
Growth and reproduction in an alpine cushion plant: *Astragalus kentrophyta* var. *implexus*.
Owen, W.R., *Great basin naturalist*, Apr. 1995, 55(2), p.117-123, 41 refs.
Plant ecology, Grasses, Alpine landscapes, Biomass, Growth, Nutrient cycle, Correlation, United States—California—White Mountains

50-1541
Alpine vascular flora of the Tushar Mountains, Utah.
Taye, A.C., *Great basin naturalist*, July 1995, 55(3), p.225-236, 55 refs.
Plant ecology, Alpine landscapes, Ecosystems, Biogeography, Vegetation patterns, Migration, Sampling, United States—Utah—Tushar Mountains

50-1542
Comparison of reproductive timing to snow conditions in wild onions and white-crowned sparrows at high altitude.
Morton, M.L., *Great basin naturalist*, Oct. 1994, 54(4), p.371-375, 15 refs.
Alpine landscapes, Plant ecology, Growth, Snow depth, Snow cover effect, Phenology, Periodic variations, Correlation

50-1543
Full-glacial shoreline vegetation during the maximum highstand at Owens Lake, California.
Koehler, P.A., Anderson, R.S., *Great basin naturalist*, Apr. 1994, 54(2), p.142-149, 41 refs.
Paleoecology, Pleistocene, Alpine glaciation, Glacier oscillation, Quaternary deposits, Sediments, Fossils, Radioactive age determination, Microclimatology, Vegetation patterns, Correlation, United States—California—Owens Lake

50-1544
Discharge and fluvial sediment transport in a semi-arid high mountain catchment, Agua Negra, San Juan, Argentina.
Barsch, D., Happoldt, H., Mäusbacher, R., Schrott, L., Schukraft, G., Dynamics and geomorphology of mountain rivers. Lecture notes in earth sciences, Vol.52. Edited by P. Ergenzinger and K.H. Schmidt, Berlin, Springer-Verlag, 1994, p.213-224, 14 refs.
DLC GB1201.2.D96 1994
Glacial hydrology, Snow hydrology, Permafrost hydrology, Meltwater, Snowmelt, Stream flow, River flow, Sediment transport, Suspended sediments, Alluvium, Water erosion, Argentina

50-1545
Sediment transport and discharge in a high arctic catchment (Liefdefjorden, NW Spitsbergen).
Barsch, D., Gude, M., Mäusbacher, R., Schukraft, G., Schulte, A., Dynamics and geomorphology of mountain rivers. Lecture notes in earth sciences, Vol.52. Edited by P. Ergenzinger and K.H. Schmidt, Berlin, Springer-Verlag, 1994, p.225-237, 16 refs.
DLC GB1201.2.D96 1994
Glacial hydrology, Snow hydrology, Snowmelt, Outwash, Mudflows, Suspended sediments, Sediment transport, Alluvium, Water erosion, Norway—Spitsbergen

50-1546

Initial environmental evaluation of the rebuilding of the research station at Signy Island, South Orkney Islands, Antarctica.

British Antarctic Survey, Cambridge, Natural Environmental Research Council, 1990, 34p., 18 refs.

Cold weather construction, Stations, Waste disposal, Construction equipment, Environmental impact, Environmental protection, Research projects, Antarctica—Signy Island

This evaluation considers a proposal to rebuild the British Antarctic Survey station at Signy I., which involves complex issues. The first issue—the capacity of Signy I. to support scientific research at a particular level—is significant in that the answer is a principal determinant for the second issue: the size, siting and extent of the station rebuild. It is proposed that the summer accommodation capacity at Signy Station should be increased from 27 to 40. The primary questions addressed in the evaluation are the impact of an increased intensity of research on the ecosystem of Signy I. and its surrounding waters, the range and importance of the research itself and the selection of a possible site for the station. If it appears that the proposed increase in scientific activity is within the capacity of the ecosystem to sustain without permanent damage, a further, more detailed site-specific assessment of the impact on a local area of a particular range and configuration of buildings will be prepared.

50-1547

Crustal structure of the Scoresby Sound area, East Greenland: results from seismic refraction and gravity measurements. [Die Struktur der Erdkruste im Bereich des Scoresby Sund, Ostgrönland: Ergebnisse refraktionsseismischer und gravimetrischer Untersuchungen]

Mandler, H., *Berichte zur Polarforschung*, 1995, No.172, 116p. + 78p. appends., In German with English summary. 74 refs.

DLC QE70.M36 1995

Seismic surveys, Gravimetric prospecting, Geophysical surveys, Earth crust, Models, Greenland—Scoresby Sund

50-1548

Expedition ARKTIS-X/2 of RV *Polarstern* in 1994. [Die Expedition ARKTIS-X/2 mit FS *Polarstern* 1994]

Hubberten, H.W., ed, *Berichte zur Polarforschung*, 1995, No.174, 186p., 42 refs.

Geophysical surveys, Geological surveys, Seismic refraction, Marine geology, Sediments, Fjords, Greenland—Scoresby Sund, Greenland—Kong Oscar Fjord, Greenland—Hochstetter Bugten

50-1549

Russian-German cooperation: The Expedition TAYMYR 1994.

Siegert, C., ed, Bol'shiianov, D.IA., ed, *Berichte zur Polarforschung*, 1995, No.175, 91p., 19 refs.

Permafrost hydrology, Active layer, Tundra soils, Soil microbiology, Russia—Severnaya Zemlya, Russia—Taymyr Peninsula, Russia—Levinson Lake, Russia—Labaz Lake

50-1550

Cryogenic properties of polymers.

Yano, O., Yamaoka, H., *Progress in polymer science*, Aug. 1995, 20(4), p.585-613, 94 refs.

Polymers, Cryogenics, Thermal conductivity, Thermal properties, Mechanical properties, Molecular structure, Molecular energy levels, Relaxation (mechanics), Temperature effects

50-1551

Relationships between 700 hPa height anomalies and 1 April snowpack accumulations in the western USA.

McCabe, G.J., Jr., Legates, D.R., *International journal of climatology*, May 1995, 15(5), p.517-530, 39 refs.

Precipitation (meteorology), Climatology, Synoptic meteorology, Atmospheric circulation, Snow accumulation, Snow cover distribution, Atmospheric pressure, Wind factors, Seasonal variations, Correlation

50-1552

Meaningful wind chill indicators derived from heat transfer principles.

Brauner, N., Schacham, M., *International journal of biometeorology*, Aug. 1995, 39(1), p.46-52, 14 refs.

Wind chill, Temperature measurement, Physiological effects, Indexes (ratios), Cold tolerance, Heat loss, Accuracy, Standards, Heat transfer, Analysis (mathematics)

50-1553

Arctic science, engineering, and education—directory of awards: fiscal year 1994.

United States. National Science Foundation, Washington, D.C., 1994, 115p., NSF 95-96.

Research projects, Education, Organizations, Cost analysis, Glaciology, Marine biology, Climatology, Oceanography, International cooperation

50-1554

Svalbard—field excursion in arctic marine biology, June 5-14, 1995.

Weissenberger, J., ed, Sippola, A.L., ed, Arctic Centre Reports. No.12, Rovaniemi, University of Lapland, 1995, 95p.

Marine biology, Oceanography, Ecology, Ecosystems, Biomass, Classifications, Distribution, Plankton, Sampling, Expeditions, Marine meteorology, Norway—Svalbard

50-1555

Relationship between carbon and oxygen isotopic composition characteristics of carbonates in loess sediments and paleoclimate.

Li, C.Y., Wang, X.B., Wen, Q.B., Shao, B., *Science in China B*, Aug. 1995, 38(8), p.979-986, 10 refs.

Quaternary deposits, Paleoclimatology, Loess, Isotope analysis, Oxygen isotopes, Geochemistry, Correlation

50-1556

Creep of frozen soil by damage mechanics.

Miao, T.D., Wei, X.X., Zhang, C.Q., *Science in China B*, Aug. 1995, 38(8), p.996-1002, 5 refs.

Geocryology, Soil creep, Frozen ground mechanics, Microstructure, Damage, Deformation, Analysis (mathematics), Rheology

50-1557

Iowa tests anti-icing strategies. *Better roads*, Apr. 1995, 65(4), p.30.

Winter maintenance, Road maintenance, Road icing, Ice control, Chemical ice prevention

50-1558

Winter maintenance and chemical shortages.

Pagan, A.R., *Better roads*, Apr. 1995, 65(4), p.37.

Winter maintenance, Road icing, Ice control, Cold weather operation, Materials, Salting, Cost analysis

50-1559

Crack filler works well—even in freezing weather.

Shorten, R., *Better roads*, Feb. 1995, 65(2), p.33.

Road maintenance, Pavements, Cracking (fracturing), Construction materials, Polymers, Cold weather performance

50-1560

Measuring salt's effectiveness in New York.

Hart, R.D., Gregory, R.O., White, P.E., Taillie, G., Guerley, L., *Better roads*, Jan. 1995, 65(1), p.15-20.

Road icing, Pavements, Surface temperature, Freezing points, Sensors, Temperature measurement, Salting, Solutions, Cold weather performance, Cold weather tests

50-1561

Meteorological events on the Italian Alps during the winter of 1993-94. [L'andamento meteorologico sulle Alpi Italiane durante la stagione invernale 1993-94]

Costantin, N., Zasso, R., *Neve e valanghe*, Nov. 1994, No.23, p.8-21, In Italian.

Climatology, Weather observations, Alpine landscapes, Precipitation (meteorology), Snow accumulation, Snow depth, Seasonal variations, Meteorological data, Italy—Alps

50-1562

Evolution of snow cover and avalanche activity in the Italian Alps during winter 1993-94. [L'evoluzione del manto nevoso e l'attivita' valanghiva sulle Alpi Italiane durante la stagione invernale 1993-94]

Lizzero, L., et al, *Neve e valanghe*, Nov. 1994, No.23, p.22-51, In Italian.

Avalanches, Alpine landscapes, Precipitation (meteorology), Seasonal variations, Snow surveys, Snow cover stability, Snow accumulation, Stratigraphy, Italy—Alps

50-1563

Avalanche incidents during the winter of 1993-94. [Gli incidenti da valanga durante la stagione invernale 1993-94]

Oberschmied, C., Tognoni, G., *Neve e valanghe*, Nov. 1994, No.23, p.52-69, In Italian.

Avalanches, Alpine landscapes, Seasonal variations, Classifications, Italy—Alps

50-1564

Heinrich-like event, H-0 (DC-0): source(s) for detrital carbonate in the North Atlantic during the Younger Dryas chronozone.

Andrews, J.T., et al, *Paleoceanography*, Oct. 1995, 10(5), p.943-952, 73 refs.

Pleistocene, Oceanography, Marine deposits, Bottom sediment, Ice sheets, Glacier oscillation, Calving, Sediment transport, Ice rafting, Radioactive age determination, Correlation, Labrador Sea

50-1565

Structure and evolution of winter cyclones in the central United States and their effects on the distribution of precipitation. Part II: arctic fronts.

Wang, P.Y., Martin, J.E., Locatelli, J.D., Hobbs, P.V., *Monthly weather review*, May 1995, 135(5), p.1328-1344, 13 refs.

Atmospheric circulation, Cloud physics, Ice crystal structure, Fronts (meteorology), Precipitation (meteorology), Snowfall, Temperature inversions, Wind direction, Meteorological factors, Sounding

50-1566

Two-year simulation of the Great Lakes region with a coupled modeling system.

Bates, G.T., Hostetler, S.W., Giorgi, F., *Monthly weather review*, May 1995, 135(5), p.1505-1522, 28 refs.

Climatology, Atmospheric boundary layer, Simulation, Lake effects, Air temperature, Precipitation (meteorology), Lake ice, Ice formation, Ice melting, Ice cover thickness, Long range forecasting, Mathematical models, United States—Great Lakes

50-1567

Genotoxicity of snow in the Montreal metropolitan area.

White, P.A., Rasmussen, J.B., Blaise, C., *Water, air, and soil pollution*, Aug. 1995, 83(3-4), p.315-334, Refs. p.332-334.

Snow cover, Snowfall, Precipitation (meteorology), Snow impurities, Air pollution, Aerosols, Scavenging, Sampling, Origin, Environmental tests, Canada—Québec—Montreal

50-1568

Freeze/thaw treatment on waste activated sludge: a FTIR spectroscopic study.

Hong, S.G., Young, J.D., Chen, G.W., Chang, I.L., Hung, W.T., Lee, D.J., *Journal of environmental science and health*, Sep. 1995, A30(8), p.1717-1726, 19 refs.

Waste treatment, Sludges, Frozen liquids, Freeze thaw cycles, Infrared spectroscopy, Spectra, Decomposition, Moisture transfer, Hygroscopic water

50-1569
Use of inexpensive automatic sequential water collectors to study the processes leading to surface water acidification during rainfall and snowmelt events.
Gaskin, G.J., Miller, J.D., Stuart, A.W., *Journal of environmental science and health,* Sep. 1995, A30(8), p.1857-1865, 20 refs.
Surface waters, Sampling, Samplers, Electronic equipment, Design, Streams, Snowmelt, Meltwater, Chemical properties, Chemical analysis

50-1570
Temperature-programmed desorption and infrared studies of D_2O ice on self-assembled alkanethiolate monolayers: influence of substrate wettability.
Engquist, I., Lundström, I., Liedberg, B., *Journal of physical chemistry,* Aug. 10, 1995, 99(32), p.12,257-12,267, 63 refs.
Ice physics, Deuterium oxide ice, Substrates, Ice solid interface, Adsorption, Monomolecular films, Hydrogen bonds, Water structure, Phase transformations, Ice spectroscopy, Infrared spectroscopy, Spectra, Temperature effects, Wettability

50-1571
Nature of the relaxation processes in the supercooled liquid and glassy states of some carbohydrates.
Gangasharan, Murthy, S.S.N., *Journal of physical chemistry,* Aug. 10, 1995, 99(32), p.12,349-12,354, 25 refs.
Liquid cooling, Solutions, Supercooling, Phase transformations, Relaxation (mechanics), Temperature measurement, Molecular structure, Dielectric properties

50-1572
Localized relaxations in the glassy states of several molecular materials before and after their polymerization.
Parthun, M.G., Johari, G.P., *Journal of chemical physics,* Nov. 1, 1995, 103(17), p.7611-7617, 25 refs.
Liquid cooling, Solutions, Phase transformations, Polymers, Supercooling, Molecular structure, Relaxation (mechanics), Temperature measurement, Temperature effects, Dielectric properties

50-1573
Evidence for ferroelectric ordering of ice Ih.
Jackson, S.M., Whitworth, R.W., *Journal of chemical physics,* Nov. 1, 1995, 103(17), p.7647-7648, 12 refs.
Ice physics, Ice structure, Molecular structure, Polarization (charge separation), Electric fields, Ice dielectrics

50-1574
Geoscientific Spitsbergen-Expedition 1990-1992 (SPE 90-92)—Liefde-, Wood- and Bockfiord NW-Spitsbergen. [Geowissenschaftliche Spitzbergen-Expedition 1990-1992 (SPE 90-92)—Liefde-, Wood- und Bockfjord/NW-Spitzbergen]
Blümel, W.D., ed, *Zeitschrift für Geomorphologie. Supplementband,* 1994, Vol.97, 274p. + maps, In German and English. Refs. passim. For individual papers see 50-1575 through 50-1596.
DLC G1.Z47 1994
Geological surveys, Topographic surveys, Glaciation, Glacial geology, Glacial deposits, Moraines, Outwash, Periglacial processes, Geochronology, Tundra soils, Tundra vegetation, Plant ecology

50-1575
Topographic and thematic maps with depictions of the results of the Spitsbergen Expedition in the period of 1990-1992. [Topographische und thematische Karten zur Ergebnisdarstellung der Spitzbergen-Expedition (SPE) 1990-1992]
Brunner, K., Hell, G., *Zeitschrift für Geomorphologie. Supplementband,* 1994, Vol.97, Geowissenschaftliche Spitzbergen Expedition (Geoscientific Spitsbergen Expedition 1990-1992). Edited by W.D. Blümel, p.1-13, In German with English and French summaries. 28 refs.
Expeditions, Topographic surveys, Topographic maps, Aerial surveys, Photogrammetry, Terrain identification, Arctic landscapes, Norway—Spitsbergen

50-1576

Geodesy: supporting measurements for SPE-projects. [Geodätische Arbeiten zur Unterstützung der SPE-Teilprojekte]

Rawiel, P., Ressing, S., *Zeitschrift für Geomorphologie. Supplementband,* 1994, Vol.97, Geowissenschaftliche Spitzbergen Expedition (Geoscientific Spitsbergen Expedition 1990-1992). Edited by W.D. Blümel, p.15-18, In German. 1 ref.

Expeditions, Geodetic surveys, Topographic surveys, Photogrammetry, Terrain identification, Norway—Spitsbergen

50-1577

Geology and tectonic evolution of Germaniahalvøya, Haakon VII Land, NW Spitsbergen (Svalbard). [Geologie und tektonische Entwicklung der Germaniahalvøya, Haakon VII Land, NW-Spitzbergen (Svalbard)]

Piepjohn, K., Thiedig, F., *Zeitschrift für Geomorphologie. Supplementband,* 1994, Vol.97, Geowissenschaftliche Spitzbergen Expedition (Geoscientific Spitsbergen Expedition 1990-1992). Edited by W.D. Blümel, p.19-29, In German with English summary. 33 refs.

Geological surveys, Geophysical surveys, Tectonics, Earth crust, Subsidence, Geologic structures, Stratigraphy, Geomorphology, Geochronology, Norway—Spitsbergen

50-1578

Contributions to the Late Quaternary glaciation history and landscape development in NW Spitsbergen (Liefde-, Bock- and Wood-Fiord area). [Zur jungquartären Vereisungsgeschichte und Landschaftsentwicklung in NW-Spitzbergen (Liefde-, Bock- und Woodfjord)]

Blümel, W.D., Eberle, J., Eitel, B., *Zeitschrift für Geomorphologie. Supplementband,* 1994, Vol.97, Geowissenschaftliche Spitzbergen Expedition (Geoscientific Spitsbergen Expedition 1990-1992). Edited by W.D. Blümel, p.31-42, In German with English and French summaries. 14 refs.

Geological surveys, Glaciation, Glacial geology, Glacial deposits, Moraines, Quaternary deposits, Periglacial processes, Geochronology, Paleoclimatology, Norway—Spitsbergen

50-1579

Contributions to the glacial history of Liefdefjord/NW Spitsbergen. [Zur Gletschergeschichte des Liefdefjords/NW-Spitzbergen]

Furrer, G., *Zeitschrift für Geomorphologie. Supplementband,* 1994, Vol.97, Geowissenschaftliche Spitzbergen Expedition (Geoscientific Spitsbergen Expedition 1990-1992). Edited by W.D. Blümel, p.43-47, In German with English and French summaries. 4 refs.

Glaciation, Glacial geology, Glacier oscillation, Glacial deposits, Soil dating, Geochronology, Paleoclimatology, Norway—Spitsbergen

50-1580

First results of structural and sedimentological investigations in the Liefdefjord and Woodfjord (northern Spitsbergen).

Kroemer, E.A., Mäusbacher, R., Müller, J., Schacht, R., *Zeitschrift für Geomorphologie. Supplementband,* 1994, Vol.97, Geowissenschaftliche Spitzbergen Expedition (Geoscientific Spitsbergen Expedition 1990-1992). Edited by W.D. Blümel, p.49-64, With German summary. 13 refs.

Geological surveys, Glacial geology, Glaciation, Glacial deposits, Moraines, Outwash, Meltwater, Sediment transport, Marine geology, Marine deposits, Bottom sediment, Norway—Spitsbergen

50-1581

Postglacial sedimentation in the Liefdefjord area, NW Spitsbergen. [Zur Entwicklung der postglazialen Sedimentation im Bereich des Liefdefjordes, NW-Spitzbergen]

Baumhauer, R., Glaser, U., *Zeitschrift für Geomorphologie. Supplementband,* 1994, Vol.97, Geowissenschaftliche Spitzbergen Expedition (Geoscientific Spitsbergen Expedition 1990-1992). Edited by W.D. Blümel, p.65-74, In German with English and French summaries. 16 refs.

Glaciation, Glacial deposits, Moraines, Outwash, Marine deposits, Lacustrine deposits, Bottom sediment, Soil dating, Geochronology, Norway—Spitsbergen

50-1582

Evolution and age of shorelines along Woodfiord, northern Spitsbergen.

Brückner, H., Halfar, R.A., *Zeitschrift für Geomorphologie. Supplementband,* 1994, Vol.97, Geowissenschaftliche Spitzbergen Expedition (Geoscientific Spitsbergen Expedition 1990-1992). Edited by W.D. Blümel, p.75-91, With German and French summaries. 28 refs.

Glacial geology, Glaciation, Glacial deposits, Moraines, Isostasy, Marine geology, Marine deposits, Coastal topographic features, Shoreline modification, Soil dating, Geochronology, Norway—Spitsbergen

50-1583

Geomorphological mapping by use of remote sensing (Germania Peninsula/Liefdefiord—NW Spitsbergen). [Geomorphologische Kartierung der Germania Halvøya am Liefdefjorden (Nordwest-Spitzbergen) mit optischen Fernerkundungsdaten]

Stäblein, G., Hochschild, V., *Zeitschrift für Geomorphologie. Supplementband,* 1994, Vol.97, Geowissenschaftliche Spitzbergen Expedition (Geoscientific Spitsbergen Expedition 1990-1992). Edited by W.D. Blümel, p.93-110, In German with English summary. 16 refs.

Geological surveys, Topographic surveys, Geological maps, Topographic maps, Aerial surveys, Geomorphology, Glacial geology, Periglacial processes, Norway—Spitsbergen

50-1584

Recent fluvial sediment budgets in glacial and periglacial environments, NW Spitsbergen.

Barsch, D., Gude, M., Mäusbacher, R., Schukraft, G., Schulte, A., *Zeitschrift für Geomorphologie. Supplementband,* 1994, Vol.97, Geowissenschaftliche Spitzbergen Expedition (Geoscientific Spitsbergen Expedition 1990-1992). Edited by W.D. Blümel, p.111-122, With German and French summaries. 23 refs.

Glacial erosion, Glacial rivers, Outwash, Periglacial processes, Slush, Mudflows, Suspended sediments, Alluvium, Water erosion, Sediment transport, Norway—Spitsbergen

50-1585

Glacial dynamics, material transfer and sedimentation of Erikbreen and Hannabreen, Liefdefjorden, northern Spitsbergen.

Sollid, J.L., Etzelmüller, B., Vatne, G., Ødegard, R.S., *Zeitschrift für Geomorphologie. Supplementband,* 1994, Vol.97, Geowissenschaftliche Spitzbergen Expedition (Geoscientific Spitsbergen Expedition 1990-1992). Edited by W.D. Blümel, p.123-144, With German and French summaries. 67 refs.

Glacier surveys, Glacial hydrology, Glacier flow, Glacial erosion, Glacial till, Glacial deposits, Moraines, Subglacial drainage, Outwash, Sediment transport, Norway—Spitsbergen

50-1586

Glaciology and glacial geomorphology of the Liefdefiord and Bockfiord areas, NW Spitsbergen. [Glaziologie und Glazialmorphologie des Liefdeund Bockfjordgebietes, NW-Spitzbergen]

King, L., Volk, M., *Zeitschrift für Geomorphologie. Supplementband,* 1994, Vol.97, Geowissenschaftliche Spitzbergen Expedition (Geoscientific Spitsbergen Expedition 1990-1992). Edited by W.D. Blümel, p.145-159, In German with English summary. 41 refs.

Glacier surveys, Glacial geology, Glacial erosion, Glacial deposits, Glacial hydrology, Ice temperature, Moraines, Periglacial processes, Norway—Spitsbergen

50-1587

Seasonal variations of streamwater chemistry of the Kvikkåa drainage basin (Liefdefjorden, NW Spitsbergen). [Saisonaler Verlauf des Vorfluterchemismus im Kvikkåa-Einzugsgebiet (Liefdefjorden, NW-Sptzbergen)]

Potschin, M., Leser, H., *Zeitschrift für Geomorphologie. Supplementband,* 1994, Vol.97, Geowissenschaftliche Spitzbergen Expedition (Geoscientific Spitsbergen Expedition 1990-1992). Edited by W.D. Blümel, p.161-174, In German with English and French summaries. 20 refs.

Glacial hydrology, Meltwater, Snowmelt, Streams, Hydrogeochemistry, Water chemistry, Seasonal variations, Norway—Spitsbergen

50-1588

Terrain as an important controlling factor for climatological, meteorological and hydrological processes in NW Spitsbergen.

Scherer, D., Parlow, E., *Zeitschrift für Geomorphologie. Supplementband,* 1994, Vol.97, Geowissenschaftliche Spitzbergen Expedition (Geoscientific Spitsbergen Expedition 1990-1992). Edited by W.D. Blümel, p.175-193, With German and French summaries. 30 refs.

Snow hydrology, Snowmelt, Slush, Mudflows, Avalanche formation, Flood forecasting, Topographic effects, Slope orientation, Insolation, Norway—Spitsbergen

50-1589

Patterned ground in the inner Woodfjord-area, NW Spitsbergen. [Frostbodenformen im inneren Woodfjord, NW-Spitzbergen]

Thannheiser, D., Möller, I., *Zeitschrift für Geomorphologie. Supplementband,* 1994, Vol.97, Geowissenschaftliche Spitzbergen Expedition (Geoscientific Spitsbergen Expedition 1990-1992). Edited by W.D. Blümel, p.195-203, In German with English and French summaries. 12 refs.

Periglacial processes, Patterned ground, Pingos, Frost action, Topographic surveys, Norway—Spitsbergen

50-1590

Vegetation geographical/synsociological research at Liefdefiord (NW Spitsbergen). [Vegetationsgeographisch-synsoziologische Untersuchungen am Liefdefjord (NW-Spitzbergen)]

Thannheiser, D., *Zeitschrift für Geomorphologie. Supplementband,* 1994, Vol.97, Geowissenschaftliche Spitzbergen Expedition (Geoscientific Spitsbergen Expedition 1990-1992). Edited by W.D. Blümel, p.205-214, In German with English and French summaries. 8 refs.

Tundra vegetation, Vegetation patterns, Plant ecology, Biogeography, Norway—Spitsbergen

50-1591

Vegetation cover and degree of ecological moisture condition as indicators for the probability of solifluction processes in high arctic ecosystems, Liefdefjord (NW Spitsbergen). [Vegetationsdecke und ökologischer Feuchtegrad als Indikatoren für solifluidale Prozesse in hocharktischen Ökosystemen des Liefdefjordes (NW-Spitzbergen)]

Schmitt, E., *Zeitschrift für Geomorphologie. Supplementband,* 1994, Vol.97, Geowissenschaftliche Spitzbergen Expedition (Geoscientific Spitsbergen Expedition 1990-1992). Edited by W.D. Blümel, p.215-226, In German with English summary. 18 refs.

Tundra vegetation, Plant ecology, Vegetation patterns, Vegetation factors, Soil water, Solifluction, Periglacial processes, Norway—Spitsbergen

50-1592

Mapping of soil groups on Germania Peninsula (Liefdefjord/NW Spitsbergen)—differentiation criteria and soil systematology. [Die Kartierung der Bodengesellschaften auf der Germania-Halbinsel (Liefdefjord/Spitzbergen)— Vorgehensweise, Abgrenzungskriterien und Bodensystematik]

Eberle, J., Blümel, W.D., *Zeitschrift für Geomorphologie. Supplementband,* 1994, Vol.97, Geowissenschaftliche Spitzbergen Expedition (Geoscientific Spitsbergen Expedition 1990-1992). Edited by W.D. Blümel, p.227-231, In German with English and French summaries. 22 refs.

Tundra soils, Cryogenic soils, Soil surveys, Soil classification, Soil mapping, Soil formation, Frost weathering, Norway—Spitsbergen

50-1593

Chemical weathering in high-arctic soils—results of pedological and sedimentological investigations in NW Spitsbergen. [Merkmale chemischer Verwitterung in hochpolaren Böden—Ergebnisse pedologisch-sedimentologischer Untersuchungen in NW-Spitzbergen]

Blümel, W.D., Eberle, J., *Zeitschrift für Geomorphologie. Supplementband,* 1994, Vol.97, Geowissenschaftliche Spitzbergen Expedition (Geoscientific Spitsbergen Expedition 1990-1992). Edited by W.D. Blümel, p.233-242, In German with English and French summaries. 25 refs.

Tundra soils, Cryogenic soils, Soil formation, Soil chemistry, Frozen ground chemistry, Weathering, Norway—Spitsbergen

50-1594

Humus conditions and typical humiferous sections of soils in the oligotrophic tundra vegetation/ NW Spitsbergen. [Humuszustand und typische Humusprofile bei Böden der oligotrophen Tundra NW-Spitzbergens]

Weber, L., Blümel, W.D., *Zeitschrift für Geomorphologie. Supplementband,* 1994, Vol.97, Geowissenschaftliche Spitzbergen Expedition (Geoscientific Spitsbergen Expedition 1990-1992). Edited by W.D. Blümel, p.243-250, In German with English and French summaries. 16 refs.

Tundra vegetation, Plant ecology, Tundra soils, Organic soils, Soil composition, Soil chemistry, Soil profiles, Nutrient cycle, Norway—Spitsbergen

50-1595

Pattern of carbon-mineralisation in the high-arctic tundra (western and northern Spitsbergen) as an expression of landscape ecologic environment heterogeneity.

Wüthrich, C., Döbeli, C., Schaub, D., Leser, H., *Zeitschrift für Geomorphologie. Supplementband,* 1994, Vol.97, Geowissenschaftliche Spitzbergen Expedition (Geoscientific Spitsbergen Expedition 1990-1992). Edited by W.D. Blümel, p.251-264, With German and French summaries. 37 refs.

Tundra vegetation, Plant ecology, Tundra soils, Soil chemistry, Soil air interface, Nutrient cycle, Geochemical cycles, Tundra climate, Norway—Spitsbergen

50-1596

Build-up, decay and role of the sea-ice cover of the Liefdefiord, NW Spitsbergen. [Aufbau, Zerfall und Bedeutung der Meereisdecke am Liefdefjord, NW-Spitzbergen]

King, L., Knies, J., *Zeitschrift für Geomorphologie. Supplementband,* 1994, Vol.97, Geowissenschaftliche Spitzbergen Expedition (Geoscientific Spitsbergen Expedition 1990-1992). Edited by W.D. Blümel, p.265-274, In German with English summary. 27 refs.

Ice surveys, Sea ice distribution, Ice cover thickness, Ice cover effect, Fast ice, Ice growth, Ice deterioration, Ice push, Ice erosion, Shore erosion, Norway—Spitsbergen

50-1597

Geocryological studies in arctic regions, Vol.3, Part 1: Man, the cryosphere and the protection of the environment in the Arctic. [Geokriologicheskie issledovaniia v arkticheskikh raĭonakh, Vypusk 3, chast' 1: Chelovek, kriosfera i okhrana prirody Arktiki]

Geokriologicheskie issledovaniia v arkticheskikh raĭonakh; mezhdunarodnyĭ simpozium, SSSR, IAmburg, Avgust 1989 (Geocryological Studies in Arctic Regions: International Symposium. USSR, Yamburg, August 1989), Mel'nikov, V.P., ed, Solov'eva, L.N., ed, Tiumen', AN SSSR, 1990, 83p., In Russian. Refs. passim. For individual papers see 50-1598 through 50-1607.

Geocryology, Environmental protection, Gas production, Petroleum industry

50-1598

Regional forecasting of cryogenic physical-geological processes and questions of the ecology of the cryolithozone in Western Siberia. [Regional'nyĭ prognoz kriogennykh fiziko-geologicheskikh protsessov i voprosy ekologii kriolitozony Zapadnoĭ Sibiri]

Grechishchev, S.E., Geokriologicheskie issledovaniia v arkticheskikh raĭonakh; Mezhdunarodnyĭ simpozium, SSSR, IAmburg, avgust 1989; Vyp. 3, Chast' 1: Chelovek, kriosfera i okhrana prirody Arktiki (Geocryological studies in the arctic regions; International Symposium, Yamburg, USSR, Aug. 1989; Vol.3, Part 1: Man, the cryosphere and the protection of the environment in the Arctic). Edited by by V.P. Mel'nikov and L.N. Solov'eva, Tiumen', AN SSSR, 1990, p.3-14, In Russian. 5 refs.

Geocryology, Geologic processes, Forecasting, Solifluction, Ground thawing, Analysis (mathematics), Frost heave, Snow accumulation, Russia—Siberia

50-1599

Geo-ecological problems of the oil and gas complex in Yamal. [Geoekologicheskie problemy neftegazovogo kompleksa IAmala]

Mel'nikov, E.S., Moskalenko, N.G., Pavlov, A.V., Geokriologicheskie issledovaniia v arkticheskikh raĭonakh; Mezhdunarodnyĭ simpozium, SSSR, IAmburg, avgust 1989; Vyp. 3, Chast' 1: Chelovek, kriosfera i okhrana prirody Arktiki (Geocryological studies in the arctic regions; International Symposium, Yamburg, USSR, Aug. 1989; Vol.3, Part 1: Man, the cryosphere and the protection of the environment in the Arctic). Edited by by V.P. Mel'nikov and L.N. Solov'eva, Tiumen', AN SSSR, 1990, p.15-23, In Russian.

Petroleum industry, Gas production, Geology, Ecology, Environmental protection, Geocryology, Russia—Yamal Peninsula

50-1600

Engineering-ecological basis for the oil and gas development of the North. [Inzhenerno-ekologicheskie osnovy neftegazovogo osvoeniia Severa]

Mazur, I.I., Geokriologicheskie issledovaniia v arkticheskikh raĭonakh; Mezhdunarodnyĭ simpozium, SSSR, IAmburg, avgust 1989; Vyp. 3, Chast' 1: Chelovek, kriosfera i okhrana prirody Arktiki (Geocryological studies in the arctic regions; International Symposium, Yamburg, USSR, Aug. 1989; Vol.3, Part 1: Man, the cryosphere and the protection of the environment in the Arctic). Edited by by V.P. Mel'nikov and L.N. Solov'eva, Tiumen', AN SSSR, 1990, p.24-27, In Russian.

Engineering geology, Gas production, Petroleum industry, Economic development, Ecology, Russia—Far North

50-1601

Problems of water supply in arctic regions: suprapermafrost taliks as sources of water supply. [Problemy vodosnabzheniia v arkticheskikh raĭonakh: nadmerzlotnye taliki kak istochnik vodosnabzheniia]

Burchak, T.V., Demidiuk, L.M., Geokriologicheskie issledovaniia v arkticheskikh raĭonakh; Mezhdunarodnyĭ simpozium, SSSR, IAmburg, avgust 1989; Vyp. 3, Chast' 1: Chelovek, kriosfera i okhrana prirody Arktiki (Geocryological studies in the arctic regions; International Symposium, Yamburg, USSR, Aug. 1989; Vol.3, Part 1: Man, the cryosphere and the protection of the environment in the Arctic). Edited by by V.P. Mel'nikov and L.N. Solov'eva, Tiumen', AN SSSR, 1990, p.28-38, In Russian. 6 refs.

Taliks, Water supply, Suprapermafrost ground water

50-1602

Stability of biogeocoenoses in the Far North under technological effects and its representation on maps. [Ustoĭchivost' biogeotsenozov Kraĭnego Severa k tekhnogennomu vozdeĭstviiu i otobrazhenie ee na kartakh]

Mel'tser, L.I., Geokriologicheskie issledovaniia v arkticheskikh raĭonakh; Mezhdunarodnyĭ simpozium, SSSR, IAmburg, avgust 1989; Vyp. 3, Chast' 1: Chelovek, kriosfera i okhrana prirody Arktiki (Geocryological studies in the arctic regions; International Symposium, Yamburg, USSR, Aug. 1989; Vol.3, Part 1: Man, the cryosphere and the protection of the environment in the Arctic). Edited by by V.P. Mel'nikov and L.N. Solov'eva, Tiumen', AN SSSR, 1990, p.39-50, In Russian. 10 refs.

Environmental impact, Mapping, Landscape types, Terraces, Tundra terrain, Stability, Russia—Far North

50-1603

Thermal recultivation of permafrost using a foam screen in the Arctic North. [Teplovaia rekul'tivatsiia mnogoletnemerzlykh gruntov pennym ekranom v usloviiakh Arkticheskogo Severa]

Feklistov, V.N., Rusakov, N.L., Abdushev, I.A., Kotlov, S.V., Geokriologicheskie issledovaniia v arkticheskikh raĭonakh; Mezhdunarodnyĭ simpozium, SSSR, IAmburg, avgust 1989; Vyp. 3, Chast' 1: Chelovek, kriosfera i okhrana prirody Arktiki (Geocryological studies in the arctic regions; International Symposium, Yamburg, USSR, Aug. 1989; Vol.3, Part 1: Man, the cryosphere and the protection of the environment in the Arctic). Edited by by V.P. Mel'nikov and L.N. Solov'eva, Tiumen', AN SSSR, 1990, p.51-58, In Russian. 9 refs.

Thermal insulation, Permafrost preservation, Heat transfer, Analysis (mathematics), Heat transfer coefficient, Isotherms, Russia—Far North

50-1604

Preventing the pollution of indigenous streams during open pit placer mining in the arctic zone of Yakutia. [Problemy predotvrashcheniia zagriazneniia prirodnykh vodotokov pri otkrytoĭ razrabotke rossypnykh mestorozhdeniĭ v arkticheskoĭ zone IAkutii]

Tsygankov, A.V., Efremov, V.T., Petrov, E.E., Geokriologicheskie issledovaniia v arkticheskikh raĭonakh; Mezhdunarodnyĭ simpozium, SSSR, IAmburg, avgust 1989; Vyp. 3, Chast' 1: Chelovek, kriosfera i okhrana prirody Arktiki (Geocryological studies in the arctic regions; International Symposium, Yamburg, USSR, Aug. 1989; Vol.3, Part 1: Man, the cryosphere and the protection of the environment in the Arctic). Edited by by V.P. Mel'nikov and L.N. Solov'eva, Tiumen', AN SSSR, 1990, p.59-65, In Russian. 3 refs.

Water pollution, Countermeasures, Streams, Environmental impact, Environmental protection, Placer mining, Heat flux, Analysis (mathematics), Russia—Yakutia

50-1605

Ecological monitoring of territories with oil and gas reserves in the cryolithozone. [K osnovam ekologicheskogo monitoringa territoriĭ neftegazovogo stroitel'stva v kriolitozone]

Antonov-Druzhinin, V.P., Shishov, V.N., Geokriologicheskie issledovaniia v arkticheskikh raĭonakh; Mezhdunarodnyĭ simpozium, SSSR, IAmburg, avgust 1989; Vyp. 3, Chast' 1: Chelovek, kriosfera i okhrana prirody Arktiki (Geocryological studies in the arctic regions; International Symposium, Yamburg, USSR, Aug. 1989; Vol.3, Part 1: Man, the cryosphere and the protection of the environment in the Arctic). Edited by by V.P. Mel'nikov and L.N. Solov'eva, Tiumen', AN SSSR, 1990, p.66-73, In Russian.

Ecology, Environmental protection, Petroleum industry, Gas production, Geocryology, Frozen ground, Ground thawing, Russia—Far North

50-1606

Ecologization of technological processes in oil and gas construction in arctic regions. [Ekologizatsiia tekhnologicheskikh protsessov neftegazovogo stroitel'stva v arkticheskikh raĭonakh]

Shishov, V.N., Chlenov, A.V., Lanetskiĭ, N.K., Grodzinskiĭ, V.V., Geokriologicheskie issledovaniia v arkticheskikh raĭonakh; Mezhdunarodnyĭ simpozium, SSSR, IAmburg, avgust 1989; Vyp. 3, Chast' 1: Chelovek, kriosfera i okhrana prirody Arktiki (Geocryological studies in the arctic regions; International Symposium, Yamburg, USSR, Aug. 1989; Vol.3, Part 1: Man, the cryosphere and the protection of the environment in the Arctic). Edited by by V.P. Mel'nikov and L.N. Solov'eva, Tiumen', AN SSSR, 1990, p.74-80, In Russian.

Geocryology, Engineering geology, Cold weather construction, Ecology, Environmental protection, Gas production, Petroleum industry, Russia—Siberia

50-1607

Policy issues associated with leasing of the Arctic National Wildlife Refuge, Alaska.

Westermeyer, W.E., Geokriologicheskie issledovaniia v arkticheskikh raĭonakh; Mezhdunarodnyĭ simpozium, SSSR, IAmburg, avgust 1989; Vyp. 3, Chast' 1: Chelovek, kriosfera i okhrana prirody Arktiki (Geocryological studies in the arctic regions; International Symposium, Yamburg, USSR, Aug. 1989; Vol.3, Part 1: Man, the cryosphere and the protection of the environment in the Arctic). Edited by by V.P. Mel'nikov and L.N. Solov'eva, Tiumen', AN SSSR, 1990, p.81-83.

Environmental protection, Environmental impact, Petroleum industry, Gas production, Cold weather operation, United States—Alaska—Arctic National Wildlife Refuge

50-1608

Geocryological studies in arctic regions, Vol.3, part 2: Studies on the stability of processes occurring in frozen soils in the presence or absence of man-made disturbances. [Geokriologicheskie issledovaniia v arkticheskikh ra&ionakh, Vypusk 3, chast' 2: Issledovanie ustoĭchivosti protsessov v merzlykh gruntakh pri nalichii i otsutstvii tekhnogennykh vozmusheniĭ]

Geokriologicheskie issledovaniia v arkticheskikh raĭonakh; mezhdunarodnyĭ simpozium, SSSR, IAmburg, Avgust 1989 (Geocryological Studies in Arctic Regions: International Symposium. USSR, Yamburg, August 1989), Mel'nikov, V.P., ed, Solov'eva, L.N., ed, Tiumen', AN SSSR, 1990, 100p., In Russian. Refs. passim. For individual papers see 50-1609 through 50-1620.

Geocryology, Frozen ground temperature, Frozen ground thermodynamics, Active layer

50-1609

Thermodynamic basis for self-regulation and control of the state of frozen ground. [Termodinamicheskie osnovy samoreguliatsii i upravleniia sostoianiem massiva merzlogo grunta]

Tsibul'skiĭ, V.R., Geokriologicheskie issledovaniia v arkticheskikh raĭonakh; Mezhdunarodnyĭ simpozium, SSSR, IAmburg, avgust 1989; Vyp. 3, Chast' 2: Issledovanie ustoĭchivosti protsessov v merzlykh gruntakh pri nalichii i otsutstvii tekhnogennykh vozmusheniĭ (Geocryological studies in arctic regions; International Symposium, Yamburg, USSR, Aug. 1989; Vol.3, Part 2: Studies on the stability of processes occurring in frozen soils in the presence or absence of man-made disturbances.) Edited by V.P. Mel'nikov and L.N. Solov'eva, Tiumen', AN SSSR, 1990, p.3-11, In Russian. 9 refs.

Mathematical models, Frozen ground thermodynamics

50-1610

Regularities in the formation of a pattern of a frost shattering system and its use in facial reconstruction and analysis of frozen ground properties. [Zakonomernosti formirovaniia risunka morozoboĭnoĭ seti i ego ispol'zovanie dlia fatsial'nykh rekonstrutsiĭ i otsenki svoĭstv merzlykh gruntov]

Zimov, S.A., Geokriologicheskie issledovaniia v arkticheskikh raĭonakh; Mezhdunarodnyĭ simpozium, SSSR, IAmburg, avgust 1989; Vyp. 3, Chast' 2: Issledovanie ustoĭchivosti protsessov v merzlykh gruntakh pri nalichii i otsutstvii tekhnogennykh vozmusheniĭ (Geocryological studies in arctic regions; International Symposium, Yamburg, USSR, Aug. 1989; Vol.3, Part 2: Studies on the stability of processes occurring in frozen soils in the presence or absence of man-made disturbances.) Edited by V.P. Mel'nikov and L.N. Solov'eva, Tiumen', AN SSSR, 1990, p.12-20, In Russian. 3 refs.

Frost shattering, Frozen ground

50-1611

Cryogenic texture development during freezing of the active layer from beneath (method and results of field studies on the southern Gydan Peninsula). [Kriogennoe teksturoobrazovanie pri promerzanii deiatel'nogo sloia snizu (metodika i rezul'taty polevykh issledovaniĭ na iuge poluostrova Gydan)]

Konstantinov, S.A., Geokriologicheskie issledovaniia v arkticheskikh raĭonakh; Mezhdunarodnyĭ simpozium, SSSR, IAmburg, avgust 1989; Vyp. 3, Chast' 2: Issledovanie ustoĭchivosti protsessov v merzlykh gruntakh pri nalichii i otsutstvii tekhnogennykh vozmusheniĭ (Geocryological studies in arctic regions; International Symposium, Yamburg, USSR, Aug. 1989; Vol.3, Part 2: Studies on the stability of processes occurring in frozen soils in the presence or absence of man-made disturbances.) Edited by V.P. Mel'nikov and L.N. Solov'eva, Tiumen', AN SSSR, 1990, p.21-28, In Russian. 5 refs.

Active layer, Soil freezing, Cryogenic structures, Cryogenic textures, Russia—Gydan Peninsula

50-1612

Results of studies on the effect of external pressure and salinity on the phase composition of water in frozen ground. [Rezul'taty issledovaniia vliianiia vneshnego davleniia i zasolennosti na fazovyĭ sostav vody v merzlykh porodakh]

Kondakov, V.V., Kondakova, O.A., Geokriologicheskie issledovaniia v arkticheskikh raĭonakh; Mezhdunarodnyĭ simpozium, SSSR, IAmburg, avgust 1989; Vyp. 3, Chast' 2: Issledovanie ustoĭchivosti protsessov v merzlykh gruntakh pri nalichii i otsutstvii tekhnogennykh vozmusheniĭ (Geocryological studies in arctic regions; International Symposium, Yamburg, USSR, Aug. 1989; Vol.3, Part 2: Studies on the stability of processes occurring in frozen soils in the presence or absence of man-made disturbances.) Edited by V.P. Mel'nikov and L.N. Solov'eva, Tiumen', AN SSSR, 1990, p.29-35, In Russian. 12 refs.

Salinity, Unfrozen water content, Frozen rocks, Phase transformations, Analysis (mathematics), Saline soils, Water temperature

50-1613

Rapid method for field studies of thermo-physical parameters of upper strata of the cryolithozone. [Ekspress-metody polevogo izucheniia teplofizicheskikh parametrov verkhnikh gorizontov kriolitozony]

Pavlov, A.V., Geokriologicheskie issledovaniia v arkticheskikh raĭonakh; Mezhdunarodnyĭ simpozium, SSSR, IAmburg, avgust 1989; Vyp. 3, Chast' 2: Issledovanie ustoĭchivosti protsessov v merzlykh gruntakh pri nalichii i otsutstvii tekhnogennykh vozmusheniĭ (Geocryological studies in arctic regions; International Symposium, Yamburg, USSR, Aug. 1989; Vol.3, Part 2: Studies on the stability of processes occurring in frozen soils in the presence or absence of man-made disturbances.) Edited by V.P. Mel'nikov and L.N. Solov'eva, Tiumen', AN SSSR, 1990, p.36-46, In Russian. 16 refs.

Geocryology, Thaw depth, Frozen ground temperature, Frozen ground thermodynamics, Active layer

50-1614

Heat transfer in a snow cover. [Teploperedacha v snezhnom pokrove]

Zviagin, V.V., Lukichev, V.F., Shreĭber, I.R., Geokriologicheskie issledovaniia v arkticheskikh raĭonakh; Mezhdunarodnyĭ simpozium, SSSR, IAmburg, avgust 1989; Vyp. 3, Chast' 2: Issledovanie ustoĭchivosti protsessov v merzlykh gruntakh pri nalichii i otsutstvii tekhnogennykh vozmusheniĭ (Geocryological studies in arctic regions; International Symposium, Yamburg, USSR, Aug. 1989; Vol.3, Part 2: Studies on the stability of processes occurring in frozen soils in the presence or absence of man-made disturbances.) Edited by V.P. Mel'nikov and L.N. Solov'eva, Tiumen', AN SSSR, 1990, p.47-56, In Russian. 4 refs.

Heat transfer, Snow cover, Snow physics, Snow thermal properties, Seepage, Snow mechanics

50-1615

Experimental and theoretical studies of the heat interactions between block-unit structures with bases under conditions of low temperature permafrost soils. [Eksperimental'nye i teoreticheskie issledovaniia teplovogo vzaimodeĭstviia sooruzheniĭ iz blok-pontonov s osnovaniiami v usloviiakh nizkotemperaturnykh vechnomerzlykh gruntov]

Gorbacheva, V.M., Maksimenko, E.S., Nikiforov, V.V., Geokriologicheskie issledovaniia v arkticheskikh raĭonakh; Mezhdunarodnyĭ simpozium, SSSR, IAmburg, avgust 1989; Vyp. 3, Chast' 2: Issledovanie ustoĭchivosti protsessov v merzlykh gruntakh pri nalichii i otsutstvii tekhnogennykh vozmusheniĭ (Geocryological studies in arctic regions; International Symposium, Yamburg, USSR, Aug. 1989; Vol.3, Part 2: Studies on the stability of processes occurring in frozen soils in the presence or absence of man-made disturbances.) Edited by V.P. Mel'nikov and L.N. Solov'eva, Tiumen', AN SSSR, 1990, p.57-61, In Russian.

Modular construction, Permafrost beneath structures, Cold weather performance, Foundations, Heat flux

50-1616

Using numerical methods for the analysis of the structure of vegetation cover and anthropogenic characteristics of the Yamburg deposits. [Ispol'zovanie kolichestvennykh metodov analiza struktury rastitel'nogo pokrova i antropogennykh osobennosteĭ IAmburgskogo mestorozhdeniia]

Gritsan, O.E., Kobeleva, N.V., Masalkin, S.D., Geokriologicheskie issledovaniia v arkticheskikh raĭonakh; Mezhdunarodnyĭ simpozium, SSSR, IAmburg, avgust 1989; Vyp. 3, Chast' 2: Issledovanie ustoĭchivosti protsessov v merzlykh gruntakh pri nalichii i otsutstvii tekhnogennykh vozmusheniĭ (Geocryological studies in arctic regions; International Symposium, Yamburg, USSR, Aug. 1989; Vol.3, Part 2: Studies on the stability of processes occurring in frozen soils in the presence or absence of man-made disturbances.) Edited by V.P. Mel'nikov and L.N. Solov'eva, Tiumen', AN SSSR, 1990, p.62-70, In Russian. 4 refs.

Analysis (mathematics), Vegetation patterns, Tundra vegetation, Plant ecology, Lichens, Mapping, Russia—Yamburg

50-1617

Analysis of the effect of construction on the temperature regime of soils according to the Noril'sk experience. [Analiz vliianiia zastroĭki na temperaturnyĭ rezhim gruntov po opytu Noril'ska]

Kadkina, E.L., Geokriologicheskie issledovaniia v arkticheskikh raĭonakh; Mezhdunarodnyĭ simpozium, SSSR, IAmburg, avgust 1989; Vyp. 3, Chast' 2: Issledovanie ustoĭchivosti protsessov v merzlykh gruntakh pri nalichii i otsutstvii tekhnogennykh vozmusheniĭ (Geocryological studies in arctic regions; International Symposium, Yamburg, USSR, Aug. 1989; Vol.3, Part 2: Studies on the stability of processes occurring in frozen soils in the presence or absence of man-made disturbances.) Edited by V.P. Mel'nikov and L.N. Solov'eva, Tiumen', AN SSSR, 1990, p.71-78, In Russian. 6 refs.

Thermal regime, Frozen ground temperature, Permafrost beneath structures, Permafrost thermal properties, Russia—Noril'sk

50-1618

Thermal calculations for complex systems of laying underground pipelines in frozen ground. [Teplovye raschety slozhnykh sistem zaglublennykh truboprovodov pri ikh prokladke v merzlykh gruntakh]

Danielian, IU.S., IAnitskiĭ, P.A., Geokriologicheskie issledovaniia v arkticheskikh raĭonakh; Mezhdunarodnyĭ simpozium, SSSR, IAmburg, avgust 1989; Vyp. 3, Chast' 2: Issledovanie ustoĭchivosti protsessov v merzlykh gruntakh pri nalichii i otsutstvii tekhnogennykh vozmusheniĭ (Geocryological studies in arctic regions; International Symposium, Yamburg, USSR, Aug. 1989; Vol.3, Part 2: Studies on the stability of processes occurring in frozen soils in the presence or absence of man-made disturbances.) Edited by V.P. Mel'nikov and L.N. Solov'eva, Tiumen', AN SSSR, 1990, p.79-90, In Russian. 9 refs.

Underground pipelines, Pipe laying, Frozen ground mechanics, Analysis (mathematics), Heat transfer coefficient, Ground thawing, Thermal regime

50-1619

Problems in producing artificial ice. [Problemy polucheniia iskusstvennogo l'da]

Smorygin, G.I., Geokriologicheskie issledovaniia v arkticheskikh raĭonakh; Mezhdunarodnyĭ simpozium, SSSR, IAmburg, avgust 1989; Vyp. 3, Chast' 2: Issledovanie ustoĭchivosti protsessov v merzlykh gruntakh pri nalichii i otsutstvii tekhnogennykh vozmusheniĭ (Geocryological studies in arctic regions; International Symposium, Yamburg, USSR, Aug. 1989; Vol.3, Part 2: Studies on the stability of processes occurring in frozen soils in the presence or absence of man-made disturbances.) Edited by V.P. Mel'nikov and L.N. Solov'eva, Tiumen', AN SSSR, 1990, p.91-95, In Russian. 5 refs.

Artificial ice, Desalting, Ice formation

50-1620

Studying the thermo-stabilization of soil with a two-phase thermosyphon of small diameter. [Issledovanie termostabilizatsii grunta s pomoshch'iu dvukhfaznykh termosifonov malogo diametra]

Pudov, A.S., Shirikhin, IU.N., Geokriologicheskie issledovaniia v arkticheskikh raĭonakh; Mezhdunarodnyĭ simpozium, SSSR, IAmburg, avgust 1989; Vyp. 3, Chast' 2: Issledovanie ustoĭchivosti protsessov v merzlykh gruntakh pri nalichii i otsutstvii tekhnogennykh vozmusheniĭ (Geocryological studies in arctic regions; International Symposium, Yamburg, USSR, Aug. 1989; Vol.3, Part 2: Studies on the stability of processes occurring in frozen soils in the presence or absence of man-made disturbances.) Edited by V.P. Mel'nikov and L.N. Solov'eva, Tiumen', AN SSSR, 1990, p.96-100, In Russian. 3 refs.

Soil stabilization, Analysis (mathematics), Heat pipes

50-1621

Geocryological studies in arctic regions, Vol.2: Modern arctic cryolithozone structure. Its evolution and stability during the Pleistocene-Holocene. [Geokriologicheskie issledovaniia v arkticheskikh raĭonakh, Vypusk 2: Stroenie sovremennoĭ kriolitozony Arktiki. Ee evoliutsiia i ustoĭchivost' v pleĭstotsene-golotsene]

Geokriologicheskie issledovaniia v arkticheskikh raĭonakh; mezhdunarodnyĭ simpozium, SSSR, IAmburg, Avgust 1989 (Geocryological Studies in Arctic Regions: International Symposium. USSR, Yamburg, August 1989), Mel'nikov, V.P., ed, Solov'eva, L.N., ed, Tiumen', AN SSSR, 1990, 116p., In Russian. Refs. passim. For individual papers see 50-1622 through 50-1633.

Geocryology, Pleistocene, Permafrost

50-1622

Preliminary results of ground ice studies in the Herschel Island area, Yukon coastal plain.

Pollard, W.H., Geokriologicheskie issledovaniia v arkticheskikh raĭonakh; Mezhdunarodnyĭ simpozium, SSSR, IAmburg, avgust 1989; Vyp. 2: Stroenie sovremennoĭ kriolitozony Arktiki. Ee evoliutsiia i ustoĭchivost' v pleĭstotsene-golotsene (Geocryological studies in the arctic regions; International Symposium, Yamburg, USSR, Aug. 1989; V 2: Modern Arctic cryolithozone structure. Its evolution and stability during the Pleistocene-Holocene). Edited by V.P. Mel'nikov and L.N. Solov'eva, Tiumen', AN SSSR, 1990, p.23-43, 16 refs.

Ground ice, Soil water, Permafrost, Ice wedges, Stratigraphy, Geocryology, Canada—Northwest Territories—Herschel Island, Canada—Yukon Territory

50-1623

Structure of cryogenic strata in the Arctic and the history of their development. [O sostave kriogennykh tolshch Arktiki i istorii ikh razvitiia]

Konishchev, V.N., Geokriologicheskie issledovaniia v arkticheskikh raĭonakh; Mezhdunarodnyĭ simpozium, SSSR, IAmburg, avgust 1989; Vyp. 2: Stroenie sovremennoĭ kriolitozony Arktiki. Ee evoliutsiia i ustoĭchivost' v pleĭstotsene-golotsene (Geocryological studies in the arctic regions; International Symposium, Yamburg, USSR, Aug. 1989; V 2: Modern Arctic cryolithozone structure. Its evolution and stability during the Pleistocene-Holocene). Edited by V.P. Mel'nikov and L.N. Solov'eva, Tiumen', AN SSSR, 1990, p.3-10, In Russian. 2 refs.

Geocryology, Quaternary deposits, Cryogenic structures, Stratigraphy, Russia—Yakutia

50-1624

Paleogeographical conditions of the degradation of Pleistocene frozen ground in Western Siberia. [Paleogeograficheskaia obstanovka degradatsii pleĭstotsenovoĭ merzloty v Zapadnoĭ Sibiri]

Astakhov, V.I., Geokriologicheskie issledovaniia v arkticheskikh raĭonakh; Mezhdunarodnyĭ simpozium, SSSR, IAmburg, avgust 1989; Vyp. 2: Stroenie sovremennoĭ kriolitozony Arktiki. Ee evoliutsiia i ustoĭchivost' v pleĭstotsene-golotsene (Geocryological studies in the arctic regions; International Symposium, Yamburg, USSR, Aug. 1989; V 2: Modern Arctic cryolithozone structure. Its evolution and stability during the Pleistocene-Holocene). Edited by V.P. Mel'nikov and L.N. Solov'eva, Tiumen', AN SSSR, 1990, p.11-19, In Russian. 17 refs.

Paleoclimatology, Pleistocene, Geography, Frozen ground, Degradation, Quaternary deposits, Russia—Siberia

50-1625

Terrain performance, Norman Wells oil pipeline, Northern Canada.

Harry, D.G., Geokriologicheskie issledovaniia v arkticheskikh raĭonakh; Mezhdunarodnyĭ simpozium, SSSR, IAmburg, avgust 1989; Vyp. 2: Stroenie sovremennoĭ kriolitozony Arktiki. Ee evoliutsiia i ustoĭchivost' v pleĭstotsene-golotsene (Geocryological studies in the arctic regions; International Symposium, Yamburg, USSR, Aug. 1989; V 2: Modern Arctic cryolithozone structure. Its evolution and stability during the Pleistocene-Holocene). Edited by V.P. Mel'nikov and L.N. Solov'eva, Tiumen', AN SSSR, 1990, p.20-22.

Pipelines, Petroleum industry, Cold weather performance, Terrain, Underground pipelines, Canada—Northwest Territories—Norman Wells

50-1626

Heat flow in the cryolithozone and its interrelationship with subsurface heat flow within the boundaries of Western Siberia. [Teplovoĭ potok v kriolitozone i ego vzaimosviaz' s glubinnym potokom tepla v predelakh Zapadnoĭ Sibiri]

Deviatkin, V.N., Kurchikov, A.R., Geokriologicheskie issledovaniia v arkticheskikh raĭonakh; Mezhdunarodnyĭ simpozium, SSSR, IAmburg, avgust 1989; Vyp. 2: Stroenie sovremennoĭ kriolitozony Arktiki. Ee evoliutsiia i ustoĭchivost' v pleĭstotsene-golotsene (Geocryological studies in the arctic regions; International Symposium, Yamburg, USSR, Aug. 1989; V 2: Modern Arctic cryolithozone structure. Its evolution and stability during the Pleistocene-Holocene). Edited by V.P. Mel'nikov and L.N. Solov'eva, Tiumen', AN SSSR, 1990, p.44-52, In Russian. 10 refs.

Geocryology, Heat transfer, Heat transfer coefficient, Analysis (mathematics), Frozen rock temperature, Russia—Siberia

50-1627

Possibility of subsea cryolithogenesis. [O vozmozhnosti submarinnogo kriolitogeneza]

Shpolianskaia, N.A., Geokriologicheskie issledovaniia v arkticheskikh raĭonakh; Mezhdunarodnyĭ simpozium, SSSR, IAmburg, avgust 1989; Vyp. 2: Stroenie sovremennoĭ kriolitozony Arktiki. Ee evoliutsiia i ustoĭchivost' v pleĭstotsene-golotsene (Geocryological studies in the arctic regions; International Symposium, Yamburg, USSR, Aug. 1989; V 2: Modern Arctic cryolithozone structure. Its evolution and stability during the Pleistocene-Holocene). Edited by V.P. Mel'nikov and L.N. Solov'eva, Tiumen', AN SSSR, 1990, p.53-61, In Russian. 19 refs.

Geocryology, Marine geology, Ocean bottom, Subsea permafrost, Water temperature, Frozen ground temperature, Temperature gradients

50-1628

Lacustrine thermokarst in northern Chukotka. [Ozernyĭ termokarst severa Chukotki]

Tishin, M.I., Geokriologicheskie issledovaniia v arkticheskikh raĭonakh; Mezhdunarodnyĭ simpozium, SSSR, IAmburg, avgust 1989; Vyp. 2: Stroenie sovremennoĭ kriolitozony Arktiki. Ee evoliutsiia i ustoĭchivost' v pleĭstotsene-golotsene (Geocryological studies in the arctic regions; International Symposium, Yamburg, USSR, Aug. 1989; V 2: Modern Arctic cryolithozone structure. Its evolution and stability during the Pleistocene-Holocene). Edited by V.P. Mel'nikov and L.N. Solov'eva, Tiumen', AN SSSR, 1990, p.62-79, In Russian. 4 refs.

Thermokarst, Ice wedges, Geocryology, Thermokarst lakes, Russia—Chukotskiy Peninsula

50-1629

Possibilities and limitations of using the oxygen isotope method in the study of ground ice and permafrost. [Vozmozhnosti i ogranicheniia primeneniia izotopno-kislorodnogo metoda v izuchenii podzemnykh l'dov i vechnoĭ merzloty]

Vaĭkmiae, R.A., Geokriologicheskie issledovaniia v arkticheskikh raĭonakh; Mezhdunarodnyĭ simpozium, SSSR, IAmburg, avgust 1989; Vyp. 2: Stroenie sovremennoĭ kriolitozony Arktiki. Ee evoliutsiia i ustoĭchivost' v pleĭstotsene-golotsene (Geocryological studies in the arctic regions; International Symposium, Yamburg, USSR, Aug. 1989; V 2: Modern Arctic cryolithozone structure. Its evolution and stability during the Pleistocene-Holocene). Edited by V.P. Mel'nikov and L.N. Solov'eva, Tiumen', AN SSSR, 1990, p.80-86, In Russian. 66 refs.

Ground ice, Permafrost, Isotope analysis, Oxygen isotopes, Geocryology

50-1630

Structure of the cryolithozone in the Timano-Pechora oil and gas-bearing province and the problem of prospecting for ground water for water supply. [Stroenie kriolitozony Timano-Pechorskoĭ neftegazonosnoĭ provintsii i problema poiska podzemnykh vod dlia vodosnabzheniia]

Dedeev, V.A., Oberman, N.G., Zytner, IU.I., Geokriologicheskie issledovaniia v arkticheskikh raĭonakh; Mezhdunarodnyĭ simpozium, SSSR, IAmburg, avgust 1989; Vyp. 2: Stroenie sovremennoĭ kriolitozony Arktiki. Ee evoliutsiia i ustoĭchivost' v pleĭstotsene-golotsene (Geocryological studies in the arctic regions; International Symposium, Yamburg, USSR, Aug. 1989; V 2: Modern Arctic cryolithozone structure. Its evolution and stability during the Pleistocene-Holocene). Edited by V.P. Mel'nikov and L.N. Solov'eva, Tiumen', AN SSSR, 1990, p.87-93, In Russian. 9 refs.

Geocryology, Cryogenic structures, Ground water, Water supply, Petroleum industry, Gas production, Hydrogeology, Russia

50-1631

Deep freezing of the shelf and a theoretical model of the evolution of the cryolithozone of the Laptev Sea. [Glubokoe promerzanie shel'fa i teoreticheskaia model' evoliutsii kriolitozony moria Laptevykh]

Fartyshev, A.I., Geokriologicheskie issledovaniia v arkticheskikh raĭonakh; Mezhdunarodnyĭ simpozium, SSSR, IAmburg, avgust 1989; Vyp. 2: Stroenie sovremennoĭ kriolitozony Arktiki. Ee evoliutsiia i ustoĭchivost' v pleĭstotsene-golotsene (Geocryological studies in the arctic regions; International Symposium, Yamburg, USSR, Aug. 1989; V 2: Modern Arctic cryolithozone structure. Its evolution and stability during the Pleistocene-Holocene). Edited by V.P. Mel'nikov and L.N. Solov'eva, Tiumen', AN SSSR, 1990, p.94-105, In Russian. 13 refs.

Geocryology, Models, Frozen rocks, Freeze thaw cycles, Ice shelves, Marine geology, Russia—Laptev Sea

50-1632

Reconstruction of the paleotemperature of the air according to ground ice isotopes. [Rekonstruktsiia paleotemperatur vozdukha po izotopii podzemnykh l'dov]

Koniakhin, M.A., Geokriologicheskie issledovaniia v arkticheskikh raĭonakh; Mezhdunarodnyĭ simpozium, SSSR, IAmburg, avgust 1989; Vyp. 2: Stroenie sovremennoĭ kriolitozony Arktiki. Ee evoliutsiia i ustoĭchivost' v pleĭstotsene-golotsene (Geocryological studies in the arctic regions; International Symposium, Yamburg, USSR, Aug. 1989; V 2: Modern Arctic cryolithozone structure. Its evolution and stability during the Pleistocene-Holocene). Edited by V.P. Mel'nikov and L.N. Solov'eva, Tiumen', AN SSSR, 1990, p.106-114, In Russian. 8 refs.

Oxygen isotopes, Air temperature, Paleoclimatology, Ground ice, Ice temperature, Ice veins

50-1633

Initiation and development of natural ground ice exposures, Canadian Arctic.

Lewkowicz, A.G., Geokriologicheskie issledovaniia v arkticheskikh raĭonakh; Mezhdunarodnyĭ simpozium, SSSR, IAmburg, avgust 1989; Vyp. 2: Stroenie sovremennoĭ kriolitozony Arktiki. Ee evoliutsiia i ustoĭchivost' v pleĭstotsene-golotsene (Geocryological studies in the arctic regions; International Symposium, Yamburg, USSR, Aug. 1989; V 2: Modern Arctic cryolithozone structure. Its evolution and stability during the Pleistocene-Holocene). Edited by V.P. Mel'nikov and L.N. Solov'eva, Tiumen', AN SSSR, 1990, p.115-116.

Ground ice, Exposure, Ice erosion, Shore erosion, Ablation, Slope orientation, Canada—Northwest Territories—Mackenzie Delta

50-1634

Processes in the polar cap and magnetosphere in the presence of northern permafrost. [Protsessy v poliarnoĭ shapke i magnitosfere pri severnom MPP]

Troshichev, O.A., *St. Petersburg. Arkticheskiĭ i antarkticheskiĭ nauchno-issledovatel'skiĭ institut. Trudy*, 1991, Vol.425, p.6-25, In Russian. 53 refs.

Atmospheric physics, Permafrost, Polar atmospheres, Electric fields, Convection, Models

It is shown that processes in the polar cap in the presence of northern permafrost differ significantly from those that take place in the presence of southern permafrost. A critical review of a series of phenomenological models of the magnetosphere in northern permafrost is given. (Auth. mod.)

50-1635

Resolving ability of a method of determining ionospheric currents according to data from meridional series of magnetometers. [Opredelenie razreshaiushcheĭ sposobnosti metodiki vosstanovleniia ionosfernykh tokov po dannym meridional'noĭ tsepochki magnitometrov]

Kotikov, A.L., Gizler, V.A., Bolotinskaia, B.D., *St. Petersburg. Arkticheskiĭ i antarkticheskiĭ nauchno-issledovatel'skiĭ institut. Trudy*, 1991, Vol.425, p.26-34, In Russian. 9 refs.

Atmospheric physics, Polar atmospheres, Magnetometers, Electrojets

50-1636

Method of conducting observations with a digital component magnetometer at antarctic stations. [Metodika provedeniia nabliudeniĭ tsifrovym komponentnym magnitometrom na antarkticheskikh stantsiiakh]

Gizler, V.A., *St. Petersburg. Arkticheskiĭ i antarkticheskiĭ nauchno-issledovatel'skiĭ institut. Trudy*, 1991, Vol.425, p.35-38, In Russian. 1 ref.

Magnetometers, Polar atmospheres, Geomagnetism

First tests of the digital component magnetometer under antarctic conditions proved it to be superior in comparison to the old generation instruments. It has the ability to measure all the components and the full vector of the field immediately, it is highly precise, and has a fast response. It can be used in observation as well as field stations. (Auth. mod.)

50-1637

Potential character of the distribution of basic physical properties of the polar ionosphere (some practical aspects). [Veroiatnostnyĭ kharakter opredeleniia osnovnykh fizicheskikh svoĭstv poliarnoĭ ionosfery (nekotorye prikladnye aspekty)]

Shirochkov, A.V., *St. Petersburg. Arkticheskiĭ i antarkticheskiĭ nauchno-issledovatel'skiĭ institut. Trudy,* 1991, Vol.425, p.64-75, In Russian. 9 refs.

Solar activity, Polar atmospheres, Atmospheric physics, Geomagnetism

50-1638

Space-time distribution of electron density in the maximum of the F2 layer at high latitudes during a period of high solar activity. [Prostranstvenno-vremennoe raspredelenie elektronnoĭ plotnosti v maksimume sloia F2 vysokikh shirot v periody ravnodenstviia v epokhu vysokoĭ solnechnoĭ aktivnosti]

Besprozvannaia, A.S., *St. Petersburg. Arkticheskiĭ i antarkticheskiĭ nauchno-issledovatel'skiĭ institut. Trudy,* 1991, Vol.425, p.76-114, In Russian. 6 refs.

Atmospheric physics, Polar atmospheres, Solar activity, Mathematical models

50-1639

Evidence of a 22-year cycle in air temperature. [Proiavlenie 22-letnego tsikla v temperature vozdukha]

Ol', A.I., Ol', G.I., *St. Petersburg. Arkticheskiĭ i antarkticheskiĭ nauchno-issledovatel'skiĭ institut. Trudy,* 1991, Vol.425, p.129-135, In Russian. 4 refs.

Air temperature, Periodic variations, Long range forecasting, Solar activity, Russia—St. Petersburg

50-1640

System analysis of the feasibility of an ionospheric data center for applications of regional polar databases. [Sistemnyĭ analiz vozmozhnosteĭ ionosfernoĭ informatiki razlichnykh realizatsiĭ regional'nykh poliarnykh bankov dannykh]

Checha, V.A., *St. Petersburg. Arkticheskiĭ i antarkticheskiĭ nauchno-issledovatel'skiĭ institut. Trudy,* 1991, Vol.425, p.136-151, In Russian. 34 refs.

Computer programs, Data processing, Atmospheric physics, Polar atmospheres

50-1641

Methodology and results from using a shortwave radio channel model to estimate the characteristics of high latitude radio communication lines. [Metodicheskie osobennosti i nekotorye rezul'taty ispol'zovaniia modeli KV radiokanala dlia rascheta kharakteristik vysokoshirotnykh radiolinii]

Lukashkin, V.M., *St. Petersburg. Arkticheskiĭ i antarkticheskiĭ nauchno-issledovatel'skiĭ institut. Trudy,* 1991, Vol.425, p.172-181, In Russian. 7 refs.

Radio communication, Polar atmospheres, Models, Russia—Franz Josef Land, Russia—Heiss Island

50-1642

Mechanisms of direct and indirect climate forcing by aerosols in the arctic region.

Blanchet, J.P., Dahlem Workshop on Aerosol Forcing of Climate, Berlin, Germany, Apr. 24-29, 1994. Environmental Sciences Research Report. No.17. Edited by R.J. Charlson et al, Chichester, John Wiley & Sons, 1995, p.109-121, 35 refs.

DLC QC981.8.C5 D25

Polar atmospheres, Climatology, Climatic changes, Aerosols, Cloud physics, Atmospheric composition, Snow cover effect, Hydrologic cycle, Radiation balance, Insolation

50-1643

Atmospheric chemistry changes versus past climate inferred from polar ice cores.

Legrand, M., Dahlem Workshop on Aerosol Forcing of Climate, Berlin, Germany, Apr. 24-29, 1994. Environmental Sciences Research Report. No.17. Edited by R.J. Charlson et al, Chichester, John Wiley & Sons, 1995, p.123-151, Refs. p.148-151.

DLC QC981.8.C5 D25

Polar atmospheres, Climatology, Climatic changes, Ice sheets, Ice cores, Aerosols, Sampling, Profiles, Correlation, Greenland, Antarctica—Vostok Station

This paper focuses on soluble minerals and organic species that are trapped in polar ice. The basics of the ionic composition of snow as well as origins and sources of impurities in polar regions are presented. Results of chemical studies of polar ice, in terms of chemical composition of the past atmosphere, are then discussed. Data on sodium and calcium (good tracers of sea salt and soil dust aerosols, respectively) from Greenland and antarctic depth profiles suggest that, in the past, the primary (sea salt and soil dust) aerosol content of the high-latitude atmosphere was strongly enhanced during cold climates. It is shown that natural and anthropogenic phenomena have modulated the secondary aerosol content of the atmosphere of both Greenland and Antarctica. Sulfate-depth profiles show that fossil-fuel combustion has enhanced sulfate concentrations in Greenland snow by a factor of two to four since the beginning of this century but that no similar trend occurred in Antarctica. Numerous studies have demonstrated that the sulfate concentrations of Greenland and antarctic ice increased very often, but for short time periods after large volcanic eruptions. Ice core data also suggest that the nonvolcanic natural sulfate background level is mainly marine and biogenic (dimethylsulfide [DMS] emissions) in origin in Antarctica, under the present climatic conditions as well as during the last two ice ages. It is also suggested that the rates of these DMS emissions have changed in the past in response to short- and long-term climatic variations. (Auth. mod.)

50-1644

Multi-path arrival estimates using simulated annealing: application to crosshole tomography experiment.

Blackowiak, A.D., Rajan, S.D., *IEEE journal of oceanic engineering,* July 1995, 20(3), p.157-165, 12 refs.

Sea ice, Oceanography, Ice acoustics, Underwater acoustics, Simulation, Statistical analysis, Thermodynamics, Sound waves, Wave propagation, Detection, Data processing

50-1645

Tilting at wind chills.

Horstmeyer, S., *Weatherwise,* Oct.-Nov. 1995, 48(5), p.24-27.

Weather observations, Wind chill, Heat loss, Air temperature, Wind velocity, Physiological effects, Indexes (ratios)

50-1646

Danger by the numbers—meaningful cold weather indicators.

Shacham, M., Brauner, N., *Weatherwise,* Oct.-Nov. 1995, 48(5), p.27-28, 1 ref.

Weather observations, Air temperature, Wind chill, Physiological effects, Surface temperature, Cold exposure, Indexes (ratios), Accuracy, Human factors

50-1647

Electron cryo-microscopy of graphite in amorphous ice.

Böttcher, B., *Ultramicroscopy,* June 1995, 58(3-4), p.417-424, 11 refs.

Scanning electron microscopy, Cryobiology, Resolution, Imaging, Performance, Amorphous ice, Ice optics, Substrates, Charge transfer, Composite materials

50-1648

Cryo-electron energy loss spectroscopy: observations on vitrified hydrated specimens and radiation damage.

Leapman, R.D., Sun, S.Q., *Ultramicroscopy,* July 1995, 59(1-4), p.71-79, 31 refs.

Ice spectroscopy, Scanning electron microscopy, Hydrates, Cryobiology, Vitreous ice, Ice optics, Radiation absorption, Degradation, Damage, Spectra, Photochemical reactions

50-1649

Epicuticular waxes of *Salix* species in relation to their overwintering survival and biomass productivity.

Hietala, T., Laakso, S., Rosenqvist, H., *Phytochemistry,* Sep. 1995, 40(1), p.23-27, 17 refs.

Trees (plants), Plant physiology, Plant tissues, Frost resistance, Cold tolerance, Cold weather tests, Biomass, Chemical analysis

50-1650

Nutrient and persistent pollutant deposition on the Bothnian Bay ice and snow fields.

Rahm, L., Håkansson, B., Larsson, P., Fogelqvist, E., Bremle, G., Valderrama, J., *Water, air, and soil pollution,* Sep. 1995, 84(1-2), p.187-201, 35 refs.

Oceanography, Air pollution, Aerosols, Fallout, Precipitation (meteorology), Sea ice, Snow cover, Snow impurities, Sampling, Nutrient cycle, Environmental tests, Bothnia, Bay

50-1651

Utility of imaging spectrometry for lithologic mapping in Greenland.

Rivard, B., Arvidson, R.E., *Photogrammetric engineering & remote sensing,* July 1992, 58(7), p.945-949, 16 refs.

Arctic landscapes, Lithology, Photogrammetric surveys, Classifications, LANDSAT, Spectroscopy, Reflectivity, Spaceborne photography, Resolution, Tundra terrain, Tundra vegetation, Lichens, Vegetation factors, Greenland

50-1652

Method for estimation of population densities of ice nucleating active *Pseudomonas syringae* in buds and leaves of mango.

Cazoria, F.M., Olalla, L., Torés, J.A., Pérez-Garcia, A., Codina, J.C., de Vicente, A., *Journal of applied bacteriology,* Sep. 1995, 79(3), p.341-346, 24 refs.

Microbiology, Trees (plants), Plant tissues, Bacteria, Ice nuclei, Ice formation, Damage, Heterogeneous nucleation, Biomass, Statistical analysis

50-1653

Revisiting the degree-day method for snowmelt computations.

Rango, A., Martinec, J., *Water resources bulletin,* Aug. 1995, 31(4), p.657-669, 31 refs.

Snow hydrology, Snowmelt, Snow depth, Degree days, Runoff forecasting, Accuracy, Heat balance, Seasonal variations, Models, Correlation

50-1654

Turbine engine icing spray bar design issues.

Bartlett, C.S., *Journal of engineering for gas turbines and power,* July 1995, 117(3), p.406-412, 11 refs.

Aircraft icing, Cloud physics, Cloud droplets, Supercooling, Jet engines, Simulation, Test chambers, Test equipment, Water transport, Spray freezing, Design

50-1655

Flow characteristics of large eruption-triggered debris flows at snow-clad volcanoes: constraints for debris-flow models.

Pierson, T.C., *Journal of volcanology and geothermal research,* July 1995, 66(1-4), p.283-294, 72 refs.

Volcanoes, Mass flow, Mass movements (geology), Classifications, Velocity measurement, Grain size, Snowmelt, Meltwater, River flow, Hydrography, Rheology, Models

50-1656

Device for clearing a soil surface of snow cover. [Agregat dlia raschistki poverkhnosti pochvy ot snezhnogo pokrova]

Goriaev, V.E., Kostrov, P.I., Galkin, G.I., Demin, V.A., *USSR. Komitet po delam izobretenii i otkrytii. Patent,* July 23, 1992, 3p., SOVP-1748667/A1, In Russian. For another version see 50-1657.

Snow removal, Snow removal equipment, Snow cover

50-1657

Device for clearing a soil surface of snow cover. [Agregat dlia raschistki poverkhnosti pochvy ot snezhnogo pokrova]

Goriaev, V.E., Kostrov, P.I., Galkin, G.I., Demin, V.A., *USSR. Komitet po delam izobretenii i otkrytii. Patent,* July 23, 1992, 3p., SOVP-1748666/A1, In Russian.

Snow removal, Snow cover, Snow removal equipment

50-1658
Device for towing a seismographic bar in ice-covered seas. [Ustroĭstvo dlia buksirovki seĭsmografnoĭ kosy v moriakh s ledovym pokrovom]
Sokholov, I.I., Dedkov, V.I., Gurevich, L.M., Buravtsev, V.IU., Gagel'gants, A.A., Petrov, IU.I., *USSR. Komitet po delam izobretenii i otkrytii. Patent,* June 30, 1992, 5p., SOVP-1744660/A1.
Seismic surveys, Ice cover effect, Sea ice, Equipment

50-1659
Geocryological studies in arctic regions, Vol. 1: Plenary papers. [Geokriologicheskie issledovaniia v arkticheskikh raĭonakh, Vypusk 1: Plenaryne doklady]
Geokriologicheskie issledovaniia v arkticheskikh raĭonakh; mezhdunarodnyĭ simpozium, SSSR, IAmburg, Avgust 1989 (Geocryological Studies in Arctic Regions: International Symposium. USSR, Yamburg, August 1989), Mel'nikov, V.P., ed, Solov'eva, L.N., ed, Tiumen', AN SSSR, 1990, 80p., In Russian. Refs. passim. For individual papers see 50-1660 through 50-1667.
Geocryology, Frozen ground mechanics, Permafrost

50-1660
Characteristics of cryolithogenesis on the arctic shelf during hydrate formation and formation of the cryolithozone in coastal plains. [Osobennosti kriolitogeneza na arkticheskom shel'fe pri gidratoobrazovanii i formirovanii kriolitozony primorskikh ravnin]
Romanovskiĭ, N.N., Barkovskaia, E.N., Komarov, I.A., Geokriologicheskie issledovaniia v arkticheskikh raĭonakh; Mezhdunarodnyĭ simpozium, SSSR, IAmburg, avgust 1989; Vyp. 1: Plenarnye doklady (Geocryological studies in the arctic regions; International Symposium, Yamburg, USSR, Aug. 1989; Vol. 1: Plenary papers). Edited by V.P. Mel'nikov and L.N. Solov'eva, Tiumen', AN SSSR, 1990, p.12-18, In Russian. 4 refs.
Geocryology, Hydrates, Plains, Shores, Marine deposits

50-1661
Geocryological bases for failure mechanics of permafrost during construction development in arctic regions. [Geokriologicheskie osnovy mekhaniki razrusheniia mnogoletnemerzlykh gruntov pri stroitel'nom osvoenii arkticheskikh raĭonov]
Rastegaev, I.K., Geokriologicheskie issledovaniia v arkticheskikh raĭonakh; Mezhdunarodnyĭ simpozium, SSSR, IAmburg, avgust 1989; Vyp. 1: Plenarnye doklady (Geocryological studies in the arctic regions; International Symposium, Yamburg, USSR, Aug. 1989; Vol. 1: Plenary papers). Edited by V.P. Mel'nikov and L.N. Solov'eva, Tiumen', AN SSSR, 1990, p.19-28, In Russian. 6 refs.
Geocryology, Frozen ground mechanics, Cold weather construction, Permafrost, Permafrost bases, Permafrost beneath structures

50-1662
Conflicts and communications in the cryosphere.
Osherenko, G., Stenbaek, M., Geokriologicheskie issledovaniia v arkticheskikh raĭonakh; Mezhdunarodnyĭ simpozium, SSSR, IAmburg, avgust 1989; Vyp. 1: Plenarnye doklady (Geocryological studies in the arctic regions; International Symposium, Yamburg, USSR, Aug. 1989; Vol. 1: Plenary papers). Edited by V.P. Mel'nikov and L.N. Solov'eva, Tiumen', AN SSSR, 1990, p.29-39, 5 refs.
Environmental impact, Environmental protection

50-1663
Current thermal regime of permafrost in Alaska and the predicted global warming.
Osterkamp, T.E., Lachenbruch, A.H., Geokriologicheskie issledovaniia v arkticheskikh raĭonakh; Mezhdunarodnyĭ simpozium, SSSR, IAmburg, avgust 1989; Vyp. 1: Plenarnye doklady (Geocryological studies in the arctic regions; International Symposium, Yamburg, USSR, Aug. 1989; Vol. 1: Plenary papers). Edited by V.P. Mel'nikov and L.N. Solov'eva, Tiumen', AN SSSR, 1990, p.40-45, 6 refs.
Permafrost thermal properties, Global warming, Global change, Permafrost preservation, United States—Alaska

50-1664
Arctic wind abrasion in a former permafrost environment of southern Scandinavia.
Svensson, H., Geokriologicheskie issledovaniia v arkticheskikh raĭonakh; Mezhdunarodnyĭ simpozium, SSSR, IAmburg, avgust 1989; Vyp. 1: Plenarnye doklady (Geocryological studies in the arctic regions; International Symposium, Yamburg, USSR, Aug. 1989; Vol. 1: Plenary papers). Edited by V.P. Mel'nikov and L.N. Solov'eva, Tiumen', AN SSSR, 1990, p.46-55, 17 refs.
Abrasion, Wind factors, Wind erosion, Sweden

50-1665
Permafrost distribution and climate change.
Nelson, F.E., Geokriologicheskie issledovaniia v arkticheskikh raĭonakh; Mezhdunarodnyĭ simpozium, SSSR, IAmburg, avgust 1989; Vyp. 1: Plenarnye doklady (Geocryological studies in the arctic regions; International Symposium, Yamburg, USSR, Aug. 1989; Vol. 1: Plenary papers). Edited by V.P. Mel'nikov and L.N. Solov'eva, Tiumen', AN SSSR, 1990, p.56-69, 19 refs.
Permafrost distribution, Climatic changes, Mapping, Canada

50-1666
Problems in the development of the Arctic as a complex regional system. [Problemy razvitiia arktiki kak slozhnoĭ regional'noĭ sistemy]
Arikaĭnen, A.I., Geokriologicheskie issledovaniia v arkticheskikh raĭonakh; Mezhdunarodnyĭ simpozium, SSSR, IAmburg, avgust 1989; Vyp. 1: Plenarnye doklady (Geocryological studies in the arctic regions: International Symposium, Yamburg, USSR, Aug. 1989; Vol. 1: Plenary papers). Edited by V.P. Mel'nikov and L.N. Solov'eva, Tiumen', AN SSSR, 1990, p.70-76, In Russian. 6 refs.
Economic development, Natural resources, Russia

50-1667
Recent advances in pipeline route selection and cost estimating methodology for pipelines in Arctic and subarctic regions.
Kreig, R.A., Metz, M.C., Geokriologicheskie issledovaniia v arkticheskikh raĭonakh; Mezhdunarodnyĭ simpozium, SSSR, IAmburg, avgust 1989; Vyp. 1: Plenarnye doklady (Geocryological studies in the arctic regions; International Symposium, Yamburg, USSR, Aug. 1989; Vol. 1: Plenary papers). Edited by V.P. Mel'nikov and L.N. Solov'eva, Tiumen', AN SSSR, 1990, p.77-80.
Pipelines, Cost analysis, Gas pipelines, United States—Alaska

50-1668
Dynamic testing of frozen soil samples with an exploding wire system.
Fyfe, I.M., MP 3718, MSNW report No.68-53-1, Seattle, Mathematical Sciences Northwest, Inc., Mar. 1968, 37p., 4 refs. Sponsored by U.S. Army Cold Regions Research and Engineering Laboratory under Contract No.DA27-021-AMC-56(X).
Frozen ground strength, Frozen ground compression, Soil tests, Strain tests, Explosion effects, Shock waves

The possibilities inherent in an exploding wire system to act as a stress wave loading device for frozen soil samples are investigated. Primary consideration is given to using the system to obtain experimental data required in the determination of the dynamic properties of frozen soils of varying degrees of water saturation. The problems of sample configuration, measuring techniques, and loading ranges are discussed. The stress-density behavior behind a shock front was obtained for soil samples at stress levels varying in intensity from a few hundred pounds per square inch to as high as 12 kbars. The stress-density relation is obtained by measuring two of the four unknown variables associated with the application of the conservation of mass and momentum across the shock front. The frozen soil samples investigated were supplied by USA CRREL and are identified as follows: 100 and 50% saturated Suffield silty clay, an undisturbed set of specimens of the same material, and a few samples of 100% saturated West Lebanon (New Hampshire) glacial till. All materials were tested at -10°C.

50-1669
Standardization of the frost heave test and revision of the CBR_3 (California Bearing Ratio) test. [Normalisation de l'essai de gonflement au gel et révision de l'essai CBR_3]
Lausanne, Switzerland. Federal Institute of Technology. Laboratory of Soil Mechanics. (École Polytechnique Fédérale de Lausanne. Laboratoire de mécanique des sols) (Eidgenössische Technische Hochschule), Bern, Département fédéral des transports, des communications et de l'énergie, Office fédéral des routes (Eidgenössisches Verkehrs- und Energiewirtschaftsdepatement. Bundesamt für Strassenbau) (Swiss Federal Department of Transportation, Communications, and Energy. Office of Highways), May 1988, 136p., In French with German and Italian summaries and some English captions. 39 refs.
Soil freezing, Frost heave, Frost resistance, Frozen ground strength, Soil trafficability, Soil classification, Soil tests, Freeze thaw tests, Standards, Switzerland

50-1670
Impact of federal programs on wetlands, Vol.2.
U.S. Department of the Interior, Washington, D.C., Mar. 1994, 333p. (Pertinent p.239-261), Refs. passim. Report to Congress by the Secretary of the Interior.
DLC QH76.I48 1988 Vol.2
Wetlands, Regional planning, Environmental impact, Environmental protection, Land reclamation, United States—Alaska

50-1671
Some contributions to the study of landforms and geomorphic processes.
Barsch, D., ed, Mäusbacher, R., ed, *Zeitschrift für Geomorphologie. Supplementband,* 1993, Vol.92, 239p., Refs. passim. For selected papers see 50-1672 through 50-1681.
DLC GB400.2.S66 1993
Glacial geology, Glacial deposits, Moraines, Periglacial processes, Permafrost distribution, Cryogenic soils, Tundra soils, Mountain soils, Sediment transport, Paleoclimatology

50-1672
Contributions to polar geomorphology by the German Spitsbergen expeditions 1990-1992.
Blümel, W.D., *Zeitschrift für Geomorphologie. Supplementband,* 1993, Vol.92, Some contributions to the study of landforms and geomorphic processes. Edited by D. Barsch and R. Mäusbacher, p.1-19, With German summary. 14 refs.
Expeditions, Research projects, Geological surveys, Glacial geology, Permafrost surveys, Tundra, Sediment transport, Norway—Spitsbergen

50-1673
Photogrammetry and geomorphology of high arctic push moraines, examples from Ellesmere Island, Canadian Arctic, and Spitsbergen, Svalbard Archipelago.
King, L., Hell, G., *Zeitschrift für Geomorphologie. Supplementband,* 1993, Vol.92, Some contributions to the study of landforms and geomorphic processes. Edited by D. Barsch and R. Mäusbacher, p.21-38, With German summary. 30 refs.
Glacier surveys, Glacial geology, Glacier oscillation, Glacial deposits, Moraines, Fossil ice, Paleoclimatology, Topographic surveys, Photogrammetric surveys, Canada—Northwest Territories—Ellesmere Island, Norway—Spitsbergen

50-1674
Slush stream phenomena—process and geomorphic impact.
Barsch, D., Gude, M., Mäusbacher, R., Schukraft, G., Schulte, A., Strauch, D., *Zeitschrift für Geomorphologie. Supplementband,* 1993, Vol.92, Some contributions to the study of landforms and geomorphic processes. Edited by D. Barsch and R. Mäusbacher, p.39-53, With German summary. 25 refs.
Snowmelt, Snow cover stability, Slush, Mudflows, Floods, Avalanche erosion, Avalanche tracks, Avalanche deposits, Sediment transport, Alluvium, Norway—Spitsbergen

50-1675

Periglacial denudation in formerly unglaciated areas of the Richardson Mountains (NW-Canada).
Fried, G., Heinrich, J., Nagel, G., Semmel, A., *Zeitschrift für Geomorphologie. Supplementband,* 1993, Vol.92, Some contributions to the study of landforms and geomorphic processes. Edited by D. Barsch and R. Mäusbacher, p.55-69, With German summary. 33 refs.
Periglacial processes, Slope processes, Tundra soils, Permafrost weathering, Frost weathering, Soil erosion, Mass movements (geology), Solifluction, Altiplanation, Paleoclimatology, Canada—Yukon Territory—Richardson Mountains

50-1676

Permafrost, gelifluction and fluvial sediment transfer in the alpine/subnival ecotone, central Alps, Austria: present, past and future.
Veit, H., Höfner, T., *Zeitschrift für Geomorphologie. Supplementband,* 1993, Vol.92, Some contributions to the study of landforms and geomorphic processes. Edited by D. Barsch and R. Mäusbacher, p.71-84, With German summary. 21 refs.
Alpine tundra, Mountain soils, Permafrost hydrology, Permafrost weathering, Periglacial processes, Slope processes, Nivation, Solifluction, Alluvium, Sediment transport, Paleoclimatology, Austria

50-1677

Pleistocene glaciations in eastern and central Tibet—preliminary results of Chinese-German joint expeditions.
Hövermann, J., Lehmkuhl, F., Pörtge, K.H., *Zeitschrift für Geomorphologie. Supplementband,* 1993, Vol.92, Some contributions to the study of landforms and geomorphic processes. Edited by D. Barsch and R. Mäusbacher, p.85-96, With German summary. 21 refs.
Geological surveys, Alpine glaciation, Glacial geology, Glacial erosion, Glacial deposits, Moraines, Outwash, Snow line, Pleistocene, Geochronology, Paleoclimatology, China—Qinghai-Xizang Plateau

50-1678

Permafrost in glaciofluvial sediments of the late pleniglacial of the last glaciation—and some conclusions to draw.
Habbe, K.A., *Zeitschrift für Geomorphologie. Supplementband,* 1993, Vol.92, Some contributions to the study of landforms and geomorphic processes. Edited by D. Barsch and R. Mäusbacher, p.97-111, With French and German summaries. 55 refs.
Glaciation, Glacial geology, Glacial erosion, Glacial deposits, Moraines, Outwash, Alluvium, Permafrost indicators, Permafrost dating, Pleistocene, Paleoclimatology

50-1679

Periglacial overlaying strata in the Bavarian forest: methods for their stratigraphic division and questions about their ecological significance.
Völkel, J., *Zeitschrift für Geomorphologie. Supplementband,* 1993, Vol.92, Some contributions to the study of landforms and geomorphic processes. Edited by D. Barsch and R. Mäusbacher, 113-125, With German summary. 19 refs.
Periglacial processes, Mountain soils, Forest soils, Cryogenic soils, Eolian soils, Soil formation, Soil profiles, Soil composition, Soil chemistry, Soil pollution, Fallout, Germany

50-1680

Geomorphological and geoecological processes in the mountain forest steppe of northern Mongolia.
Opp, C., Barsch, H., *Zeitschrift für Geomorphologie. Supplementband,* 1993, Vol.92, Some contributions to the study of landforms and geomorphic processes. Edited by D. Barsch and R. Mäusbacher, p.145-157, With French and German summaries. 5 refs.
Steppes, Soil surveys, Cryogenic soils, Soil erosion, Soil conservation, Plant ecology, Vegetation patterns, Permafrost distribution, Permafrost depth, Mongolia

50-1681

Stratigraphy of slope deposits and soils in the northeastern Great Basin and vicinity.
Kleber, A., *Zeitschrift für Geomorphologie. Supplementband,* 1993, Vol.92, Some contributions to the study of landforms and geomorphic processes. Edited by D. Barsch and R. Mäusbacher, p.173-188, With German summary. 49 refs.
Soil surveys, Soil formation, Soil composition, Soil profiles, Soil dating, Loess, Mountain soils, Glacial deposits, Lacustrine deposits, Stratigraphy, Paleoclimatology, United States—Utah

50-1682

Geomorphological altitude zones in the Qinling Shan (People's Republic of China) particularly in regard to Early Pleistocene glaciation. [Geomorphologische Höhenstufen im Qinling Shan (VR China) unter besonderer Berücksichtigung der jungpleistozänen Vergletscherungen]
Rost, K.T., *Göttinger geographische Abhandlungen,* 1992, No.97, 89p., In German with English and Chinese summaries. Refs. p.80-86.
DLC G1.G6 Heft 97
Geological surveys, Alpine glaciation, Glacial geology, Glacial deposits, Moraines, Periglacial processes, Nivation, Snow line, Alluvium, Sediment transport, Geochronology, Pleistocene, Paleoclimatology, China—Qinling Mountains

50-1683

Anchorage, Alaska's wetlands management plan.
Salvesen, D.A., Collaborative planning for wetlands and wildlife: issues and examples, Washington, D.C., Island Press, 1995, p.203-224, 5 refs.
DLC QH76.C65 1995
Wetlands, Regional planning, Land development, Economic development, Environmental protection, Legislation, United States—Alaska—Anchorage

50-1684

Study on periglacial landforms and periglacial sediments in Lagunita del Plata, Mendoza, Argentina. [Untersuchungen zum periglazialen Formenschatz und zu periglazialen Sedimenten in der "Lagunita del Plata", Mendoza, Argentinien]
Trombotto, D., *Heidelberger geographische Arbeiten,* 1991, No.90, 151p., In German with English summary. Refs. p.137-150.
DLC GB588.31.T76 1991
Periglacial processes, Slope processes, Rock glaciers, Solifluction, Altiplanation, Cryoturbation, Permafrost indicators, Talus, Cryogenic soils, Sediment transport, Argentina

50-1685

Real time oil spill forecasting during an experimental oil spill in the arctic ice.
Reed, M., Aamo, O.M., *Spill science & technology bulletin,* 1994, 1(1), p.69-77, 6 refs.
Oil spills, Water pollution, Ice edge, Ice water interface, Ice cover effect, Drift, Wind factors, Computerized simulation, Barents Sea

50-1686

Adsorption-desorption of 2,4,6-trinitrotoluene and hexahydrol-1,3,5-trinitro-1,3,5-triazine in soils.
Xue, S.K., Iskandar, I.K., Selim, H.M., MP 3719, *Soil science,* Nov. 1995, 100(5), p.317-327, 15 refs.
Soil pollution, Soil chemistry, Soil tests, Explosives, Military facilities
The adsorption-desorption behavior of TNT (2,4,6-trinitrotoluene) and RDX (hexahydro-1,3,5-trinitro-1,3,5-triazine) in bentonite/sand and Norwood and Kolin soils was studied. The kinetics of TNT and RDX retention were measured using batch methods for a range of input concentrations. For RDX, the adsorption isotherms were distinctly linear. The TNT adsorption isotherm for bentonite/sand mixture appeared linear and was described equally well using linear, Freundlich, Langmuir, and a modified Langmuir model. For the Norwood and Kolin soils, TNT adsorption isotherms exhibited distinct nonlinearity and the Freundlich model provided the best fit. As indicated by the K_d values, TNT exhibited stronger retention or affinity to all soils and the bentonite/sand mixture than for RDX. The RDX retention data indicated little time-dependent behavior. The TNT retention data indicated a continued decrease in TNT concentration with time in the Norwood and Kolin soils. This was possibly caused by the formation and subsequent adsorption of transformation products because transformation products, such as amino nitro toluene compounds, were identified during batch experiments.

50-1687

Atmospheric ozone, its depletion and antarctic ozone hole.
Ghosh, S.N., Midya, S.K., *Indian journal of physics,* 1994, 68B(6), p.473-493, 30 refs.
Polar atmospheres, Atmospheric composition, Ozone, Stratosphere, Air pollution
Ozone depletion and the ozone hole at Antarctica are reviewed. Beginning in the 1960s with the availability of new information on solar radiation from rocket-borne experiments, accurate information on stratospheric reaction rates and of ozone concentrations, it became clear that the atmospheric ozone concentration was less than that predicted. Several catalytic reactions involving ozone were identified. It was further realized that solar UV-B (3200-2800 Å) radiation is not totally absorbed by the ozone layer and the remaining part affects man, animals, fishes and plants. Thus, ozone depletion poses a serious problem. It has been learnt that the depletion of ozone is due to technological progress in rocketry, supersonic aircraft flight, refrigeration, nitrogeneous fertilizers and others. Another problem of great concern to mankind was the dramatic decrease of O_3 concentration during spring in Antarctica, reported in 1985. The decrease in ozone content has been confirmed by using ground-based, balloon and satellite-borne instruments. Reactions for ozone depletion are formulated and theories are proposed for the hole. (Auth. mod.)

50-1688

Transport of 2,4,6-trinitrotoluene and hexahydrol-1,3,5-trinitro-1,3,5-triazine in soils.
Selim, H.M., Xue, S.K., Iskandar, I.K., MP 3720, *Soil science,* Nov. 1995, 100(5), p.328-339, 18 refs.
Soil pollution, Soil chemistry, Soil tests, Explosives, Military facilities
The fate and transport of explosives in soils was investigated. Transport experiments were conducted to describe the mobility of 2,4,6-trinitrotoluene (TNT) and hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX) in a SWy-1 reference clay (bentonite mixed with sand) and two selected soils (Norwood and Kolin). Miscible displacement experiments in packed soil columns under steady flow were used. For the bentonite/sand column, TNT was highly mobile and fully reversible when methanol was used as the background solution. In contrast, with 0.005 M $Ca(NO_3)_2$ as the background solution, the TNT pulse was strongly retarded with as much as 50% of that applied remaining within the bentonite/sand, Norwood, or Kolin columns. Products of the transformation of TNT to 4-Am-DNT and other compounds were identified in the effluent solution. A 7-day flow interruption during the TNT pulse application resulted in decreased TNT levels in the effluent solution. This decrease corresponded to a sudden increase in the 4-Am-DNT concentration in the effluent, with peak concentrations of 0.60 mg/ml. For RDX, only limited retention was observed in all columns.

50-1689

Full depth testing of frost susceptible soils. Final report.
Rice, D.C., *U.S. Federal Highway Administration. Report,* Jan. 1982, FHWA-MA-RD-1209-F, 122p. + append., PB84-174986, This contains only the main text. The microfiche from National Technical Information Service (NTIS), PB84-174986, includes additional appendices bound separately.
Subgrade soils, Soil freezing, Soil strength, Soil trafficability, Soil compaction, Soil tests, Frost heave, Frost resistance, Frost penetration, Road maintenance, Subgrade maintenance

50-1690

Mutual influence of ice heave and interlayer swelling in clay rocks. Final report (draft).
Czurda, K.A., Wagner, J.F., *U.S. Army European Research Office, London. Report,* July 1986, 115p., Refs. p.109-115.
Clay soils, Clay minerals, Soil freezing, Frost heave, Frozen ground strength, Frozen rock strength, Freeze thaw tests, Frost resistance, Frost action, Soil creep, Slope stability

50-1691

Snow in the Spanish Cordilleras. ERHIN Progam. 1991/92. [La nieve en las cordilleras españolas. Programa ERHIN. Año 1992/93], Madrid, Spain, Ministerio de Obras Públicas, Transportes y Medio Ambiente. Dirección General de Obras Hidráulicas (Ministry of Public Works, Transportation and Environment. General Administration of Hydraulic Works), 1995, 281p., In Spanish. 16 refs. The acronym ERHIN is for Hidráulicos producidos por la Innivación en la alta montaña española (Study of Hydraulic Resources in the High Spanish Mountains).
Snow surveys, Snow cover distribution, Snowfall, Snow depth, Snow density, Snowmelt, Runoff, Glacier surveys, Glacier mass balance, Spain

50-1692

Preliminary study of ice flow observations along traverse routes from coast to Dome Fuji, East Antarctica by differential GPS method.

Motoyama, H., et al, *Antarctic record,* July 1995, 39(2), p.94-98, With Japanese summary. 7 refs.

Ice, Flow rate, Rheology, Traverses, Flow measurement, Antarctica—Showa Station, Antarctica—Mizuho Station, Antarctica—East Antarctica

Ice flow measurements were carried out along traverse routes from Showa Station to Dome Fuji, 1992-1994, using the differential GPS (Global Positioning System) method. This positioning method is easier to use in the field than the satellite doppler positioning system (JMR) or triangle chain method. The vertical and horizontal error of positioning was within 1 ppm of base line. The horizontal speed and direction of ice flow were almost the same each year at each site. (Auth. mod.)

50-1693

Development of the JARE deep ice coring system (II).

Narita, H., et al, *Antarctic record,* July 1995, 39(2), p.99-146, In Japanese with English summary. Refs. p.145-146.

Ice cores, Ice coring drills, Experimentation, Antarctica—Queen Maud Land, Greenland, Japan

A deep ice coring system, which is to be used at Dome Fuji Station at the summit of the Queen Maud Land ice sheet in 1995 and 1996, has been under development since 1988. The mechanical system was designed to reduce power consumption and weight. Many experiments were carried out on parts of the system in a cold laboratory. Simultaneously, field experiments of the drill system were done at Dome GRIP, Greenland ice sheet and at Rikubetsu, Hokkaido. As a result, an electro-mechanical drill which is simple both in shape and mechanism can be designed and produced, incorporating many new ideas introduced through the experiments. (Auth.)

50-1694

Shallow ice coring and borehole casing at Dome Fuji Station, East Antarctica.

Motoyama, H., Enomoto, H., Miyahara, M., Watanabe, O., *Antarctic record,* July 1995, 39(2), p.189-197, With Japanese summary. 5 refs.

Ice cores, Ice coring drills, Ice physics, Snow density, Boreholes, Measurement, Antarctica—East Antarctica

A Deep Ice Coring Project at Dome Fuji, East Antarctica has been conducted by the Japanese Antarctic Research Expedition (JARE) since 1992. Shallow ice coring of 112 m in depth and casing of its borehole at Dome Fuji Station were carried out in Dec. 1993 and Jan. 1994 by JARE-34. The characteristics of snow densification showed similar features to those on Mizuho Plateau. The penetration rate of ice cutting can potentially provide useful information on physical properties of ice. (Auth.)

50-1695

Report on Workshop "Study of the Polar Atmosphere and Cryosphere using Remote-Sensing Data".

Hirasawa, N., Yamanouchi, T., Ejiri, M., *Antarctic record,* July 1995, 39(2), p.198-204, In Japanese with English summary. 2 refs.

Remote sensing, Atmospheric circulation, Sea ice distribution, Albedo, Snow, Clouds (meteorology), Antarctica—Showa Station

A workshop on recent results of polar atmosphere/cryosphere research, using remote-sensing data and their algorithms, held on Jan. 25, 1995 at the National Institute of Polar Research (NIPR) is reviewed. The following was discussed: sea ice distribution; the velocity field of pack ice migration in the vicinity of Showa Station; albedo variations in a glacier and a part of the ice sheet, using NOAA AVHRR data; some effects of the radius of snow particles in the accumulated snow layer; dust contamination and propagation of ice algae; some features of the surface and near surface structure of the antarctic ice sheet; an algorithm for detection of cloud, sea ice and ice sheet around Showa Station using NOAA AVHRR data; the relationship between hemispheric-scale atmospheric circulation in the Southern Hemisphere and the distribution pattern of OLR (Outgoing Longwave Radiation, calculated by NOAA AVHRR data) over Antarctica; numerical modeling which takes into account multi-scattering in the snow/ice layer; influence on the albedo at the snow/ice surface for some parameters of ice particle size; and the number of accumulated snow layers. (Auth. mod.)

50-1696

Proceedings.

International Arctic Technology Conference, Anchorage, Alaska, May 29-31, 1991, Richardson, Texas, Society of Petroleum Engineers, 1991, 892p., Refs. passim. For selected papers see 50-1697 through 50-1769.

Petroleum industry, Hydrocarbons, Reservoirs, Cold weather operation, Cold weather construction, Exploration, Oil wells, Gas wells, Pipe laying, Drilling, Oil recovery, Flooding, Permafrost transformation, Frozen ground mechanics, Environmental impact, Environmental protection, Engineering geology, United States—Alaska

50-1697

Drilling waste disposal in the Arctic using below-grade freezeback.

Maunder, T.E, Le, K.M., Miller, D.L., International Arctic Technology Conference, Anchorage, AK, May 29-31, 1991. Proceedings, Richardson, TX, Society of Petroleum Engineers, 1991, p.9-20, 11 refs.

Oil wells, Drilling, Mud, Waste disposal, Excavation, Permafrost transformation, Soil freezing, Heat transfer, Freezing points, Thaw depth, United States—Alaska—North Slope

50-1698

Laboratory/field study of oil-soluble resin-diverting agents in Prudhoe Bay, Alaska acidizing operations.

Strassner, J.E., Townsend, M.A., Tucker, H.E., International Arctic Technology Conference, Anchorage, AK, May 29-31, 1991. Proceedings, Richardson, TX, Society of Petroleum Engineers, 1991, p.29-38, 6 refs.

Oil wells, Drilling, Sediments, Coring, Sealing, Solubility, Fluid dynamics, Geochemistry, Fluid dynamics, Particle size distribution, United States—Alaska—Prudhoe Bay

50-1699

Fishing with 1.5- and 1.75-in. coiled tubing at western Prudhoe Bay, Alaska.

Mullin, M.A., McCarty, S.H., Plante, M.E., International Arctic Technology Conference, Anchorage, AK, May 29-31, 1991. Proceedings, Richardson, TX, Society of Petroleum Engineers, 1991, p.39-44, 8 refs.

Oil wells, Drilling, Maintenance, Pipes (tubes), Design, Performance, United States—Alaska—Prudhoe Bay

50-1700

Prudhoe Bay field, Alaska, waterflood injection water quality and remedial treatment study.

Hsi, C.D., Strassner, J.E., Tucker, H.E., Townsend, M.A., International Arctic Technology Conference, Anchorage, AK, May 29-31, 1991. Proceedings, Richardson, TX, Society of Petroleum Engineers, 1991, p.45-54, 7 refs.

Wells, Water treatment, Coring, Boreholes, Hydraulics, Fluid dynamics, Water pressure, Permeability, Filters, United States—Alaska—Prudhoe Bay

50-1701

Optimal fracture stimulation of a moderate permeability reservoir, Kuparuk River unit.

Pearson, C.M., Bond, A.J., Eck, M.E., Lynch, K.W., International Arctic Technology Conference, Anchorage, AK, May 29-31, 1991. Proceedings, Richardson, TX, Society of Petroleum Engineers, 1991, p.55-64, 14 refs.

Oil wells, Geologic structures, Permeability, Oil recovery, Hydraulics, Liquids, Design criteria, United States—Alaska—Kuparuk River

50-1702

Compositional simulation and performance analysis of the Prudhoe Bay Miscible Gas Project.

McGuire, P.L., Moritz, A.L., Jr., International Arctic Technology Conference, Anchorage, AK, May 29-31, 1991. Proceedings, Richardson, TX, Society of Petroleum Engineers, 1991, p.65-74, 11 refs.

Hydrocarbons, Gas wells, Hydrogeochemistry, Flooding, Solubility, Turbulent diffusion, Liquids, Sampling, Simulation, Performance, United States—Alaska—Prudhoe Bay

50-1703

Effects of steam quality on cyclic steam stimulation at Cold Lake, Alberta.

Ho, D.W., Morgan, B.T., International Arctic Technology Conference, Anchorage, AK, May 29-31, 1991. Proceedings, Richardson, TX, Society of Petroleum Engineers, 1991, p.75-82, 8 refs.

Oil wells, Oil recovery, Bitumens, Steam, Geochemistry, Fluid dynamics, Vapor pressure, Performance, Canada—Alberta—Cold Lake

50-1704

Use of acrolein as a hydrogen sulfide scavenger in multiphase production.

Howell, J.J., Ward, M.B., International Arctic Technology Conference, Anchorage, AK, May 29-31, 1991. Proceedings, Richardson, TX, Society of Petroleum Engineers, 1991, p.113-122, 8 refs.

Oil wells, Pipelines, Geochemistry, Crude oil, Impurities, Gases, Scavenging, United States—Alaska—North Slope

50-1705

New lightweight technology for the primary cementing of oilfield casings in cold environments.

Harris, K.L., International Arctic Technology Conference, Anchorage, AK, May 29-31, 1991. Proceedings, Richardson, TX, Society of Petroleum Engineers, 1991, p.123-130, 11 refs.

Oil wells, Well casings, Stabilization, Cold weather performance, Cement admixtures, Lightweight concretes, Physical properties, Compressive properties, Rheology

50-1706

Lost circulation material usage in coiled tubing remedial cementing at Prudhoe Bay.

Krause, R.E., International Arctic Technology Conference, Anchorage, AK, May 29-31, 1991. Proceedings, Richardson, TX, Society of Petroleum Engineers, 1991, p.131-138, 8 refs.

Oil wells, Gas wells, Boreholes, Pipes (tubes), Drilling fluids, Sealing, Cement admixtures, Aggregates, Performance, United States—Alaska—Prudhoe Bay

50-1707

Thixotropic, crosslinking polymer/borate/salt plug: development and application.

Powell, J.W., Stagg, T.O., Reiley, R.H., Dobson, J., International Arctic Technology Conference, Anchorage, AK, May 29-31, 1991. Proceedings, Richardson, TX, Society of Petroleum Engineers, 1991, p.139-146, 6 refs.

Gas wells, Boreholes, Fluid dynamics, Sealing, Pipes (tubes), Drilling fluids, Thixotropy, Physical properties, Polymers, Performance, United States—Alaska—Prudhoe Bay

50-1708

Environmental control of drilling mud discharge through dewatering in cold weather climates: effect of ambient temperature.

Wojtanowicz, A.K., Ye, Y.W., International Arctic Technology Conference, Anchorage, AK, May 29-31, 1991. Proceedings, Richardson, TX, Society of Petroleum Engineers, 1991, p.147-153, 13 refs.

Oil wells, Drilling fluids, Desiccation, Waste disposal, Waste treatment, Mud, Freeze thaw cycles, Environmental protection, Cold weather tests, Temperature effects

50-1709

Alternatives for closure of solid oily waste sites on the North Slope of Alaska.

Kellems, B.L., Slocum, R.W., Kavanaugh, M.C., International Arctic Technology Conference, Anchorage, AK, May 29-31, 1991. Proceedings, Richardson, TX, Society of Petroleum Engineers, 1991, p.155-167, 13 refs.

Oil wells, Soil pollution, Waste treatment, Waste disposal, Sludges, Drilling fluids, Mud, Stabilization, Environmental tests, Environmental protection, Subsurface investigations, Cold weather performance, United States—Alaska—North Slope

50-1710
Primary and secondary containment of hazardous substances in cold regions with HDPE liner.
Richards, F.T., Foster, M.L., International Arctic Technology Conference, Anchorage, AK, May 29-31, 1991. Proceedings, Richardson, TX, Society of Petroleum Engineers, 1991, p.169-172, 13 refs.
Oil wells, Waste disposal, Waste treatment, Linings, Polymers, Cold weather performance, Environmental protection, Thermal stresses, Cracking (fracturing), Design criteria

50-1711
Another look at oil transportation in and from the arctic environment.
Marsden, S.S., Jr., Ozarar, I., International Arctic Technology Conference, Anchorage, AK, May 29-31, 1991. Proceedings, Richardson, TX, Society of Petroleum Engineers, 1991, p.173-178, 13 refs.
Petroleum industry, Crude oil, Underground pipelines, Tanker ships, Pipe flow, Cold weather operation, Chemical properties, Admixtures, Dispersions, Brines, Rheology, Permafrost preservation, Environmental protection

50-1712
Waterflood monitoring technique results in improved reservoir management for the Hemlock Reservoir, McArthur River Field, Cook Inlet, Alaska.
Starzer, M.R., Borden, C.U., Schoffmann, A.B., International Arctic Technology Conference, Anchorage, AK, May 29-31, 1991. Proceedings, Richardson, TX, Society of Petroleum Engineers, 1991, p.187-196, 4 refs.
Oil wells, Offshore drilling, Reservoirs, Classifications, Oil recovery, Water pressure, Flooding, Monitors, Performance, United States—Alaska—Cook Inlet

50-1713
Challenge of West Sak heavy oil: analysis of an innovative approach.
Gondouin, M., Fox, J.M., III, International Arctic Technology Conference, Anchorage, AK, May 29-31, 1991. Proceedings, Richardson, TX, Society of Petroleum Engineers, 1991, p.215-228, 17 refs.
Oil wells, Reservoirs, Oil recovery, Permafrost preservation, Steam, Vapor transfer, Boreholes, Pipes (tubes), Cost analysis, United States—Alaska—Kuparuk

50-1714
Return fluid analysis from the Sadlerochit Formation, Prudhoe Bay, Alaska: a laboratory study—part II.
Fambrough, J.D., Brady, J.L., Almond, S.W., International Arctic Technology Conference, Anchorage, AK, May 29-31, 1991. Proceedings, Richardson, TX, Society of Petroleum Engineers, 1991, p.229-246, 19 refs.
Oil wells, Oil recovery, Impurities, Drilling fluids, Boreholes, Solubility, Permeability, Chemical analysis, Geochemistry, United States—Alaska—Prudhoe Bay

50-1715
Research on new Alaskan mining technology.
Chamberlain, P.G., International Arctic Technology Conference, Anchorage, AK, May 29-31, 1991. Proceedings, Richardson, TX, Society of Petroleum Engineers, 1991, p.251-259, 2 refs.
Minerals, Mining, Engineering geology, Environmental impact, Economic development, Research projects, United States—Alaska

50-1716
Hydraulic mining of permafrost placers by boreholes.
Khrulev, A.S., International Arctic Technology Conference, Anchorage, AK, May 29-31, 1991. Proceedings, Richardson, TX, Society of Petroleum Engineers, 1991, p.261-266, 3 refs.
Placer mining, Boreholes, Hydraulic jets, Sediment transport, Permafrost physics, Permafrost transformation, Ground thawing, Sands

50-1717
Open-cast underground technology of permafrost placer mining in the Arctic.
Lavrov, N.P., Lukjanov, D.N., International Arctic Technology Conference, Anchorage, AK, May 29-31, 1991. Proceedings, Richardson, TX, Society of Petroleum Engineers, 1991, p.267-273.
Placer mining, Pits (excavations), Permafrost thermal properties, Permafrost transformation, Sediments, Supports, Artificial freezing

50-1718
Large-scale loading and collapse of natural sea ice and natural-artificial ice laminates.
Lichtenberger, G.J., International Arctic Technology Conference, Anchorage, AK, May 29-31, 1991. Proceedings, Richardson, TX, Society of Petroleum Engineers, 1991, p.275-287, 22 refs.
Ice mechanics, Sea ice, Loading, Ultimate strength, Bearing strength, Composite materials, Mechanical tests, Ice solid interface, Cracking (fracturing), Tensile properties

50-1719
Model pile tests in saline soils.
Christopherson, A., Nelson, W., Nottingham, D., Somervile, D., International Arctic Technology Conference, Anchorage, AK, May 29-31, 1991. Proceedings, Richardson, TX, Society of Petroleum Engineers, 1991, p.289-296, 7 refs.
Pile structures, Pile load tests, Dislocations (materials), Frozen ground mechanics, Permafrost beneath structures, Permafrost physics, Saline soils, Creep, Mechanical tests

50-1720
FEM analysis of the creep behavior of a spray ice island and comparison with actual island performance.
Thiel, D.T., Reddy, D.V., International Arctic Technology Conference, Anchorage, AK, May 29-31, 1991. Proceedings, Richardson, TX, Society of Petroleum Engineers, 1991, p.297-304, 17 refs.
Spray freezing, Ice (construction material), Ice islands, Offshore structures, Offshore drilling, Ice creep, Viscoelasticity, Correlation, Structural analysis, Settlement (structural), Mathematical models, Correlation

50-1721
Comparison between measured global ice loads and geotechnical response of arctic offshore structures.
Blanchet, D., Hewitt, K.J., Sladen, J., International Arctic Technology Conference, Anchorage, AK, May 29-31, 1991. Proceedings, Richardson, TX, Society of Petroleum Engineers, 1991, p.305-319, 33 refs.
Offshore structures, Offshore drilling, Caissons, Deformation, Stability, Ice solid interface, Ice floes, Ice loads, Ice pressure, Design criteria

50-1722
Development of an Alaskan North Slope soils database for drill cuttings reclamation.
Schumacher, J.P., Gillespie, J.D., Malachosky, E., Hampton, P.D., International Arctic Technology Conference, Anchorage, AK, May 29-31, 1991. Proceedings, Richardson, TX, Society of Petroleum Engineers, 1991, p.321-332, 17 refs.
Oil wells, Drilling fluids, Mud, Pits (excavations), Waste disposal, Construction materials, Sediments, Geochemistry, Soil composition, Sampling, Environmental impact, United States—Alaska—North Slope

50-1723
Drilling wastes management for Alaska's North Slope.
Fristoe, B.R., International Arctic Technology Conference, Anchorage, AK, May 29-31, 1991. Proceedings, Richardson, TX, Society of Petroleum Engineers, 1991, p.333-340, 8 refs.
Oil wells, Drilling fluids, Waste disposal, Soil pollution, Frozen ground chemistry, Environmental protection, Pits (excavations), Tundra soils, Thaw depth, Permafrost preservation, United States—Alaska—North Slope

50-1724
Development of procedures for hot tap welding onto sour service pipelines.
Felix, R.D., Bruce, W.A., Threadgill, P.L., International Arctic Technology Conference, Anchorage, AK, May 29-31, 1991. Proceedings, Richardson, TX, Society of Petroleum Engineers, 1991, p.349-359, 9 refs.
Gas wells, Gas pipelines, Maintenance, Welding, Metals, Joints (junctions), Hardness, Pipe flow, Simulation, United States—Alaska—Prudhoe Bay

50-1725
Relationship of telluric currents to the corrosion of warm arctic pipelines.
Sackinger, W.M., International Arctic Technology Conference, Anchorage, AK, May 29-31, 1991. Proceedings, Richardson, TX, Society of Petroleum Engineers, 1991, p.361-366, 13 refs.
Suspended pipelines, Underground pipelines, Electrical resistivity, Atmospheric electricity, Geomagnetism, Coatings, Corrosion, Protection, Countermeasures, Mathematical models

50-1726
Design method for testing procedure for avoiding weld zone corrosion in ships and offshore structures.
DeGeer, D.D., Zimmerman, T.J.E., International Arctic Technology Conference, Anchorage, AK, May 29-31, 1991. Proceedings, Richardson, TX, Society of Petroleum Engineers, 1991, p.367-376, 17 refs.
Offshore structures, Icebreakers, Plates, Steels, Corrosion, Floating ice, Ice solid interface, Abrasion, Welding, Joints (junctions), Water chemistry, Ion diffusion, Hardness tests, Design

50-1727
Evaluation of vacuum-insulated tubing for paraffin control at Norman Wells.
Purdy, I.L., Cheyne, A.J., International Arctic Technology Conference, Anchorage, AK, May 29-31, 1991. Proceedings, Richardson, TX, Society of Petroleum Engineers, 1991, p.387-392.
Oil wells, Boreholes, Pipes (tubes), Pipe flow, Viscous flow, Sedimentation, Thermal insulation, Temperature control, Countermeasures, Canada—Northwest Territories—Norman Wells

50-1728
Wellbore multiphase-flow correlation for the eastern operating area of Prudhoe Bay.
Bradley, D.A., International Arctic Technology Conference, Anchorage, AK, May 29-31, 1991. Proceedings, Richardson, TX, Society of Petroleum Engineers, 1991, p.393-398, 8 refs.
Oil wells, Gas wells, Boreholes, Pipe flow, Fluid flow, Pressure, Flow control, Correlation, Computerized simulation, Computer programs, Forecasting, United States—Alaska—Prudhoe Bay

50-1729
Hydrogen sulfide forecasting techniques for the Kuparuk River Field.
Frazer, L.C., Bolling, J.D., International Arctic Technology Conference, Anchorage, AK, May 29-31, 1991. Proceedings, Richardson, TX, Society of Petroleum Engineers, 1991, p.399-406, 5 refs.
Oil wells, Reservoirs, Offshore drilling, Oil recovery, Chemical analysis, Gases, Impurities, Degradation, Microbiology, Bacteria, Forecasting, United States—Alaska—North Slope

50-1730
Construction activities inside of air structures protected from the arctic environment.
Mangus, A.R., International Arctic Technology Conference, Anchorage, AK, May 29-31, 1991. Proceedings, Richardson, TX, Society of Petroleum Engineers, 1991, p.421-432, 17 refs.
Inflatable structures, Construction equipment, Design, Cold weather operation, Prefabrication, Anchors, Permafrost beneath structures

50-1731

Offshore development in iceberg-infested waters with the use of a concrete protective barrier.

Broughton, P., Davies, R.L., Berthin, J.C., Martin, J., International Arctic Technology Conference, Anchorage, AK, May 29-31, 1991. Proceedings, Richardson, TX, Society of Petroleum Engineers, 1991, p.433-442, 12 refs.

Oil wells, Offshore drilling, Offshore structures, Icebergs, Impact strength, Damage, Protection, Concrete structures, Subsurface structures, Walls, Design

50-1732

New, low-cost, ice- and wave-resistant port facility at Nome, Alaska.

Swigart, W.S., Nottingham, D., International Arctic Technology Conference, Anchorage, AK, May 29-31, 1991. Proceedings, Richardson, TX, Society of Petroleum Engineers, 1991, p.443-448, 2 refs.

Offshore structures, Docks, Ports, Design, Pile structures, Panels, Cold weather construction, Pack ice, Ice loads, Protection, United States—Alaska—Nome

50-1733

Thermosiphon-based designs and applications for foundations built on permafrost.

Zarling, J.P., Haynes, F.D., MP 3721, International Arctic Technology Conference, Anchorage, AK, May 29-31, 1991. Proceedings, Richardson, TX, Society of Petroleum Engineers, 1991, p.449-458, 16 refs.

Permafrost beneath structures, Foundations, Cold weather construction, Pipes (tubes), Heat transfer, Subgrade soils, Soil temperature, Temperature control, Thermal diffusion, Soil stabilization, Permafrost preservation, Design

Thermosyphons have been used across Alaska and northern Canada as a means of stabilizing foundations built on permafrost. This paper describes a number of different applications including details of the installations. A brief discussion of the design methodology is also presented.

50-1734

Kuparuk River module crossing case history: a critical arctic oilfield transportation link is protected by a refrigerated foundation.

Christopherson, A.B., Nottingham, D., International Arctic Technology Conference, Anchorage, AK, May 29-31, 1991. Proceedings, Richardson, TX, Society of Petroleum Engineers, 1991, p.459-469.

River crossings, Floodplains, Bridges, Permafrost beneath structures, Subgrade soils, Pile structures, Foundations, Soil stabilization, Soil freezing, Artificial freezing, Refrigeration, Thermal analysis, Design, United States—Alaska—Kuparuk River

50-1735

OTH-backscatter power plant foundation design for warm, ice-rich permafrost soils.

Foster, M.L., Washburn, D.S., Foote, D.S., International Arctic Technology Conference, Anchorage, AK, May 29-31, 1991. Proceedings, Richardson, TX, Society of Petroleum Engineers, 1991, p.471-480, 23 refs.

Cold weather construction, Military facilities, Site surveys, Permafrost beneath structures, Foundations, Pipes (tubes), Permafrost heat transfer, Soil stabilization, Soil temperature, Temperature control, Refrigeration, Design

50-1736

Dynamics of subsurface and geocryological conditions in foundations for power structures in the northeast region, USSR.

Krivonogova, N.F., Kagan, A., International Arctic Technology Conference, Anchorage, AK, May 29-31, 1991. Proceedings, Richardson, TX, Society of Petroleum Engineers, 1991, p.481-482.

Electric power, Cold weather construction, Geocryology, Foundations, Refrigeration, Temperature control, Soil stabilization, Design, Russia

50-1737

Foundation heave induced by a subgrade cooling system over permafrost.

Scher, R.L., International Arctic Technology Conference, Anchorage, AK, May 29-31, 1991. Proceedings, Richardson, TX, Society of Petroleum Engineers, 1991, p.483-492, 18 refs.

Permafrost beneath structures, Buildings, Floors, Foundations, Subgrades, Cooling systems, Thermal regime, Frost heave, Frozen ground expansion, Unfrozen water content, Moisture transfer

50-1738

Large-diameter glory hole drilling: the evolution from 12- to 20-ft diameter.

Shields, R.G., International Arctic Technology Conference, Anchorage, AK, May 29-31, 1991. Proceedings, Richardson, TX, Society of Petroleum Engineers, 1991, p.493-502.

Offshore drilling, Boreholes, Subsurface structures, Rotary drilling, Excavation, Icebergs, Ice scoring, Protection, Mechanical properties, Design

50-1739

Drilling smaller surface holes results in substantial cost savings.

Krawietz, T.E., Gremley, R.B., International Arctic Technology Conference, Anchorage, AK, May 29-31, 1991. Proceedings, Richardson, TX, Society of Petroleum Engineers, 1991, p.507-512.

Oil wells, Drilling, Permafrost bases, Boreholes, Well casings, Design, Cost analysis, Soil mechanics, Physical properties

50-1740

Effective unconsolidated core preservation in the arctic environment: an aid to accurate reservoir evaluation.

MacGregor, K.W., Park, E.I., Sincock, K.J., Piekenbrock, E.J., International Arctic Technology Conference, Anchorage, AK, May 29-31, 1991. Proceedings, Richardson, TX, Society of Petroleum Engineers, 1991, p.535-544, 6 refs.

Hydrocarbons, Reservoirs, Exploration, Sands, Sampling, Drill core analysis, Degradation, Preserving, Artificial freezing, Dry ice (trademark)

50-1741

Applications of oxygen activation for injection and production profiling in the Kuparuk River Field.

Scott, H.D., Pearson, C.M., Renke, S.M., McKeon, D.C., Meisenhelder, J.P., International Arctic Technology Conference, Anchorage, AK, May 29-31, 1991. Proceedings, Richardson, TX, Society of Petroleum Engineers, 1991, p.555-565, 13 refs.

Oil wells, Reservoirs, Oil recovery, Flooding, Well casings, Pipe flow, Water flow, Sampling, Radioactive logging, Profiles, United States—Alaska—Kuparuk River

50-1742

Shaft and Tunnel Access (SATAC) concepts for developing petroleum reserves.

Haskin, C.A., Bugno, W.T., Miller, R.M., Jr., International Arctic Technology Conference, Anchorage, AK, May 29-31, 1991. Proceedings, Richardson, TX, Society of Petroleum Engineers, 1991, p.567-572, 33 refs.

Oil wells, Reservoirs, Mining, Exploration, Shafts (excavations), Tunneling (excavation), Cold weather construction, Protection

50-1743

Applicability of Soviet arctic mining technology to northern America.

Skudrzyk, F.J., International Arctic Technology Conference, Anchorage, AK, May 29-31, 1991. Proceedings, Richardson, TX, Society of Petroleum Engineers, 1991, p.573-585, 8 refs.

Mining, Placer mining, Drilling, Boreholes, Frozen ground temperature, Permafrost structure, Classifications, Cold weather construction, Engineering geology

50-1744

Creation of high-productive seeding meadows on disturbed arctic lands.

Tikhmenev, E.A., International Arctic Technology Conference, Anchorage, AK, May 29-31, 1991. Proceedings, Richardson, TX, Society of Petroleum Engineers, 1991, p.587-592, 8 refs.

Ecosystems, Mining, Pits (excavations), Soil erosion, Degradation, Meadow soils, Ground thawing, Arctic landscapes, Land reclamation, Revegetation, Biomass, Environmental protection

50-1745

Peculiarities of rock massif behavior in a zone of transition from subzero to above zero temperatures.

Chislov, A.I., International Arctic Technology Conference, Anchorage, AK, May 29-31, 1991. Proceedings, Richardson, TX, Society of Petroleum Engineers, 1991, p.593-602, 5 refs.

Earth crust, Mining, Rock properties, Freezing, Temperature variations, Temperature measurement, Permafrost transformation, Permafrost hydrology, Geocryology, Mining

50-1746

Permafrost and thermal interfaces from Norman Wells pipeline ditchwall logs.

Nixon, J.F., Saunders, R., Smith, J., International Arctic Technology Conference, Anchorage, AK, May 29-31, 1991. Proceedings, Richardson, TX, Society of Petroleum Engineers, 1991, p.603-609, 5 refs.

Underground pipelines, Cold weather construction, Permafrost structure, Discontinuous permafrost, Permafrost distribution, Trenching, Ice solid interface, Permafrost surveys, Geophysical surveys, Canada—Northwest Territories—Norman Wells

50-1747

Drilling and sampling of permafrost for site investigation purposes: a review.

Riddle, C.H., Hardcastle, P.K., International Arctic Technology Conference, Anchorage, AK, May 29-31, 1991. Proceedings, Richardson, TX, Society of Petroleum Engineers, 1991, p.611-620, 26 refs.

Permafrost surveys, Sampling, Drilling, Coring, Site surveys, Permafrost structure, Frozen ground mechanics, Soil classification

50-1748

Effects of total water content on dynamic properties of frozen soils.

Fukuda, M., Huang, S.L., International Arctic Technology Conference, Anchorage, AK, May 29-31, 1991. Proceedings, Richardson, TX, Society of Petroleum Engineers, 1991, p.621-629, 7 refs.

Frozen ground mechanics, Soil tests, Frozen ground temperature, Ultrasonic tests, Seismic velocity, Temperature variations, Correlation, Temperature effects, Dynamic properties, Unfrozen water content

50-1749

Slope stability problems in open pit coal mines in permafrost regions.

Vakili, J., International Arctic Technology Conference, Anchorage, AK, May 29-31, 1991. Proceedings, Richardson, TX, Society of Petroleum Engineers, 1991, p.631-634, 10 refs.

Pits (excavations), Mining, Slope stability, Soil stabilization, Permafrost depth, Permafrost transformation, Ground thawing, Frozen ground strength

50-1750

Optimizing fracture stimulations in the McArthur River Field, Hemlock Reservoir, utilizing historical results and improved technology.

Schoffmann, A.B., International Arctic Technology Conference, Anchorage, AK, May 29-31, 1991. Proceedings, Richardson, TX, Society of Petroleum Engineers, 1991, p.635-646, 4 refs.

Oil recovery, Oil wells, Offshore drilling, Reservoirs, Flooding, Hydraulics, United States—Alaska—McArthur River

50-1751

Acid stimulation of Endicott Kekiktuk Formation, North Slope, Alaska.

Hsi, C.K.D., Strassner, J.E., Blosser, W.R., International Arctic Technology Conference, Anchorage, AK, May 29-31, 1991. Proceedings, Richardson, TX, Society of Petroleum Engineers, 1991, p.647-658, 8 refs.

Oil wells, Offshore drilling, Drill core analysis, Reservoirs, Lithology, Oil recovery, Liquids, Geochemistry, Brines, Permeability, United States—Alaska—North Slope

50-1752

Arctic bioremediation: a case study.

Liddell, B.V., Smallbeck, D.R., Ramert, P.C., International Arctic Technology Conference, Anchorage, AK, May 29-31, 1991. Proceedings, Richardson, TX, Society of Petroleum Engineers, 1991, p.659-670, 3 refs.

Oil spills, Oil recovery, Pits (excavations), Microbiology, Cold weather operation, Degradation, Soil chemistry, Environmental protection, Simulation

50-1753

Arctic and Offshore Research Information System.

Shoemaker, H.D., Chiang, D.L., International Arctic Technology Conference, Anchorage, AK, May 29-31, 1991. Proceedings, Richardson, TX, Society of Petroleum Engineers, 1991, p.671-678, 2 refs.

Natural resources, Hydrocarbons, Petroleum industry, Offshore drilling, Bibliographies, Computer applications, Computer programs, Data processing, Ice loads, Design criteria

50-1754

Real prospects for further utilization of mineral resources in the Arctic: technology adaptation to environment.

Zamoshch, M.N., International Arctic Technology Conference, Anchorage, AK, May 29-31, 1991. Proceedings, Richardson, TX, Society of Petroleum Engineers, 1991, p.679-687, 12 refs.

Minerals, Placer mining, Engineering geology, Pits (excavations), Arctic landscapes, Degradation, Environmental impact, Land reclamation, Landscape types, Countermeasures

50-1755

Evolving description of a fractured carbonate reservoir: the Lisburne Field, Prudhoe Bay, Alaska.

Missman, R.A., Jameson, J., International Arctic Technology Conference, Anchorage, AK. May 29-31, 1991. Proceedings, Richardson, TX, Society of Petroleum Engineers, 1991, p.699-718, 35 refs.

Oil wells, Reservoirs, Engineering geology, Geological surveys, Boreholes, Stratigraphy, Rock properties, Porosity, Oil recovery, Flooding, Models, Accuracy, United States—Alaska—Prudhoe Bay

50-1756

Conglomerate identification and mapping leads to development success in a mature Alaskan field.

O'Sullivan, T.P., Kiloh, K.D., Starzer, M.R., Trevena, A.S., International Arctic Technology Conference, Anchorage, AK, May 29-31, 1991. Proceedings, Richardson, TX, Society of Petroleum Engineers, 1991, p.719-726, 12 refs.

Oil wells, Reservoirs, Exploration, Lithology, Stratification, Mapping, Oil recovery, Flooding, Coring, Radioactive logging, United States—Alaska—Cook Inlet

50-1757

Incorporating reservoir heterogeneity using geostatistics to investigate waterflood recoveries for drillsite 1E, A4 sandstone body, Kuparuk River Field, Alaska.

Wolcott, D.S., Chopra, A.K., International Arctic Technology Conference, Anchorage, AK, May 29-31, 1991. Proceedings, Richardson, TX, Society of Petroleum Engineers, 1991, p.727-744, 48 refs.

Oil wells, Orientation, Reservoirs, Geologic structures, Geological surveys, Statistical analysis, Mapping, Oil recovery, Flooding, Forecasting, United States—Alaska—Kuparuk River

50-1758

Cold region hydraulic oil applications.

Uhrik, S.L., International Arctic Technology Conference, Anchorage, AK, May 29-31, 1991. Proceedings, Richardson, TX, Society of Petroleum Engineers, 1991, p.745-754, 50 refs.

Cold weather construction, Machinery, Engines, Lubricants, Classifications, Mechanical properties, Cold weather performance, Hydraulics, Viscosity, Standards

50-1759

Gas measurement with large Venturi tubes at Prudhoe Bay, Alaska.

Metz, W.P., Bruchie, J.D., Fritz, R.H., International Arctic Technology Conference, Anchorage, AK, May 29-31, 1991. Proceedings, Richardson, TX, Society of Petroleum Engineers, 1991, p.755-758.

Oil wells, Oil recovery, Gases, Fluid dynamics, Flow measurement, Flow rate, Pipes (tubes), Measuring instruments, Performance, United States—Alaska—Prudhoe Bay

50-1760

Enhanced oil recovery of Ugnu tar sands of Alaska using electromagnetic heating with horizontal wells.

Islam, M.R., Wadadar, S.S., Bansal, A., International Arctic Technology Conference, Anchorage, AK, May 29-31, 1991. Proceedings, Richardson, TX, Society of Petroleum Engineers, 1991, p.759-770, 17 refs.

Oil wells, Reservoirs, Oil recovery, Sands, Permafrost thermal properties, Heat loss, Flooding, Gases, Electric heating, Fluid dynamics, Analysis (mathematics), United States—Alaska—Ugnu

50-1761

Adverse telluric effects on northern pipelines.

Seager, W.H., International Arctic Technology Conference, Anchorage, AK, May 29-31, 1991. Proceedings, Richardson, TX, Society of Petroleum Engineers, 1991, p.771-783, 2 refs.

Underground pipelines, Suspended pipelines, Atmospheric electricity, Geoelectricity, Coatings, Corrosion, Electrical resistivity, Polarization (charge separation), Permafrost physics, Countermeasures

50-1762

Environmental activity management and control exercised by pipelaying association.

Shishov, V.N., International Arctic Technology Conference, Anchorage, AK, May 29-31, 1991. Proceedings, Richardson, TX, Society of Petroleum Engineers, 1991, p.785-790.

Underground pipelines, Pipe laying, Engineering geology, Permafrost preservation, Environmental impact, Countermeasures, Monitors

50-1763

Gas-producing units construction experience in the arctic regions.

Zavizion, V.G., International Arctic Technology Conference, Anchorage, AK, May 29-31, 1991. Proceedings, Richardson, TX, Society of Petroleum Engineers, 1991, p.791-793.

Gas wells, Gas pipelines, Pipe laying, Cold weather construction, Continuous permafrost, Geocryology, Engineering geology

50-1764

Environmental safety of construction of gas and oil facilities in arctic regions.

Mazur, I.I., Mazur, E.V., International Arctic Technology Conference, Anchorage, AK, May 29-31, 1991. Proceedings, Richardson, TX, Society of Petroleum Engineers, 1991, p.795-805, 9 refs.

Cold weather construction, Hydrocarbons, Engineering geology, Pipelines, Environmental protection, Environmental impact, Ecology

50-1765

Parameterizing environmental assessments for oil and gas facility construction.

Semenov, L.P., International Arctic Technology Conference, Anchorage, AK, May 29-31, 1991. Proceedings, Richardson, TX, Society of Petroleum Engineers, 1991, p.807-811, 3 refs.

Cold weather construction, Hydrocarbons, Pipelines, Environmental impact, Environmental protection, Tundra terrain, Permafrost preservation, Ecology, Standards

50-1766

Environmental research project for Yamburg gas fields.

Chlenov, A.V., International Arctic Technology Conference, Anchorage, AK, May 29-31, 1991. Proceedings, Richardson, TX, Society of Petroleum Engineers, 1991, p.817-821, 3 refs.

Cold weather construction, Hydrocarbons, Pipelines, Drilling, Engineering geology, Environmental impact, Degradation, Environmental protection, Plant ecology, Tundra soils, Periglacial processes, Land reclamation, Revegetation, Russia—Yamburg

50-1767

Biological rehabilitation of disturbed lands in the arctic gas-producing regions.

Masalkin, S.D., International Arctic Technology Conference, Anchorage, AK, May 29-31, 1991. Proceedings, Richardson, TX, Society of Petroleum Engineers, 1991, p.823-827, 4 refs.

Gas wells, Cold weather construction, Tundra soils, Permafrost transformation, Environmental impact, Environmental protection, Revegetation, Land reclamation, Plant ecology, Russia—Yamal Peninsula

50-1768

Foundation rehabilitation at ADOT/PF Jim River Maintenance Camp.

Rooney, J.W., Riddle, C.H., Scher, R.L., International Arctic Technology Conference, Anchorage, AK, May 29-31, 1991. Proceedings, Richardson, TX, Society of Petroleum Engineers, 1991, p.829-840, 8 refs.

Cold weather construction, Buildings, Foundations, Frost heave, Subgrade soils, Thermal regime, Thaw weakening, Settlement (structural), Permafrost thermal properties, Soil stabilization, Cooling systems, Subsurface structures, Soil freezing, Artificial freezing, United States—Alaska—Jim River

50-1769

Field-tested model for freeze protection of multiphase pipelines in arctic operations.

Eager, K., International Arctic Technology Conference, Anchorage, AK, May 29-31, 1991. Proceedings, Richardson, TX, Society of Petroleum Engineers, 1991, p.841-852, 4 refs.

Suspended pipelines, Pipeline freezing, Pipe flow, Cold weather tests, Liquid cooling, Freezing rate, Temperature measurement, Pipeline freezing, Frost protection, Mathematical models

50-1770

Laboratory investigation of thermal conductivity of dust crust models on the ice comet nuclei surfaces.

Ibadinov, Kh.I., Rahmonov, A.A., Aliev, S.A., Czechoslovak Academy of Sciences Publication. No. 67 and International Astronomical Union. European Regional Astronomy Meeting. Praha, Czechoslovakia, Aug. 24-29, 1987. Proceedings, Vol.2. Interplanetary matter. Edited by Z. Ceplecha et al, Ondrejov, Czechoslovak Academy of Sciences, 1987, p.55-57, 10 refs.

DLC QB1.C284 A3

Extraterrestrial ice, Ice physics, Porous materials, Surface properties, Simulation, Ice nuclei, Ice sublimation, Ice vapor interface, Thermal conductivity, Geochemistry

50-1771

Atmospheric ozone as a climate gas: general circulation model simulations.

Wang, W.C., ed, Isaksen, I.S.A., ed, North Atlantic Treaty Organization. Advanced Science Institutes. NATO ASI Series I: Global environmental change, Vol.32, Berlin, Springer-Verlag, 1995, 459p., Refs. passim. Proceedings of the Advanced Study Institute on Atmospheric Ozone as a Climate Gas, Lillehammer, Norway, June 19-23, 1994. For selected papers see 50-1772 through 50-1779.

DLC QC879.7.A89 1995

Polar atmospheres, Atmospheric circulation, Atmospheric composition, Ozone, Polar stratospheric clouds, Global warming, Computerized simulation

50-1772

Simulations of stratospheric ozone in a climate model.

Austin, J., Butchart, N., Atmospheric ozone as a climate gas. North Atlantic Treaty Organization. Advanced Science Institutes. NATO ASI Series I, Vol.32. Edited by W.C. Wang and I.S.A. Isaksen, Berlin, Springer-Verlag, 1995, p.87-99, 10 refs.

Polar atmospheres, Atmospheric composition, Atmospheric circulation, Polar stratospheric clouds, Ozone, Global warming, Computerized simulation

50-1773

GCM modeling of the stratospheric dynamics and its coupling with chemistry.

Cariolle, D., Déqué, M., Lefèvre, F., De Rudder, A., Atmospheric ozone as a climate gas. North Atlantic Treaty Organization. Advanced Science Institutes. NATO ASI Series I, Vol.32. Edited by W.C. Wang and I.S.A. Isaksen, Berlin, Springer-Verlag, 1995, p.101-111, 10 refs.

Polar atmospheres, Marine atmospheres, Atmospheric circulation, Atmospheric composition, Ozone, Polar stratospheric clouds, Air water interactions, Global warming, Computerized simulation

50-1774

Concurrent ozone and temperature trends derived from ozonesonde stations.

Fortuin, J.P.F., Van Dorland, R., Kelder, H., Atmospheric ozone as a climate gas. North Atlantic Treaty Organization. Advanced Science Institutes. NATO ASI Series I, Vol.32. Edited by W.C. Wang and I.S.A. Isaksen, Berlin, Springer-Verlag, 1995, p.131-144, 23 refs.

Atmospheric circulation, Atmospheric composition, Ozone, Air temperature, Global warming, Weather stations, Data transmission, Statistical analysis

A linear trend study, by means of a multiple linear regression analysis, is performed on concurrent ozone and temperature data obtained from 12 ozonesonde stations, 11 of which are in the Northern Hemisphere. The regression analysis takes into account the seasonal, solar and quasi biennial cycles, plus events like volcanic eruptions and instrument change. For all stations, a significant negative ozone trend in (some regions of) the stratosphere is found, which, except for the Canadian stations and one European station, is combined with a significant stratospheric cooling. As for the troposphere, mostly insignificant or negative ozone trends over Europe and Canada respectively are accompanied by barely significant or insignificant temperature trends. The Japanese stations and Wallops I. in the U.S., on the other hand, show strong ozone increases in the lower troposphere and a clearly significant surface warming over the past two decades. Above the South Pole, an observed strong cooling during Nov. can be simulated with a radiative transfer model under the concept of fixed dynamical heating, due to the observed ozone hole deepening one month earlier. (Auth. mod.)

50-1775

On the interrelationship between recent climate trends, ozone changes and increased greenhouse gas forcing.

Graf, H.F., Perlwitz, J., Kirchner, I., Schult, I., Atmospheric ozone as a climate gas. North Atlantic Treaty Organization. Advanced Science Institutes. NATO ASI Series I, Vol.32. Edited by W.C. Wang and I.S.A. Isaksen, Berlin, Springer-Verlag, 1995, p.163-179, 15 refs.

Polar atmospheres, Atmospheric circulation, Atmospheric composition, Ozone, Global warming, Computerized simulation

50-1776

GCM study of the climatic effect of 1979-1992 ozone trend.

Liang, X.Z., Wang, W.C., Atmospheric ozone as a climate gas. North Atlantic Treaty Organization. Advanced Science Institutes. NATO ASI Series I, Vol.32. Edited by W.C. Wang and I.S.A. Isaksen, Berlin, Springer-Verlag, 1995, p.259-288, 40 refs.

Polar atmospheres, Atmospheric circulation, Atmospheric composition, Ozone, Global warming, Computerized simulation

The climatic effect of the column ozone trend derived from TOMS data is investigated using an updated version of GENESIS general circulation model (GCM). The GCM employs a newly constructed ozone climatology that includes longitudinal variation. In the perturbed simulation, the O_3 trend is assumed to be confined to the lower stratosphere, and imposed in transient from Jan. 1979 to Dec. 1992 to incorporate both seasonal variations and linear year to year changes. In response to the O_3 depletion, the south polar (70-90°S) lower stratosphere experiences a significant cooling trend from Sep. to Jan., with a peak in Nov. This cooling is accompanied by lower tropospheric warming. For boreal winter, lower stratospheric cooling trends are also identified in the mid-latitudes of both hemispheres. These GCM signals resemble observations, and can be explained in terms of radiative forcing expectations. Over the Arctic, a relatively small O_3 loss leads the model stratosphere to warm substantially during Nov.-Jan. This is followed by a strong cooling in Mar.-May. The result cannot be attributed exclusively to the radiative forcing. Rather it indicates the dominant role of dynamical feedbacks and the importance of atmospheric inertia. Furthermore, the climate responses in the atmosphere and at the surface reveal a pronounced longitudinal contrast, especially over the Arctic where a vigorous pattern analogous to zonal waves 1-2 is identified. (Auth. mod.)

50-1777

Chemistry of ozone in the upper troposphere and lower stratosphere: perspectives from laboratory studies.

Ravishankara, A.R., Atmospheric ozone as a climate gas. North Atlantic Treaty Organization. Advanced Science Institutes. NATO ASI Series I, Vol.32. Edited by W.C. Wang and I.S.A. Isaksen, Berlin, Springer-Verlag, 1995, p.343-361, 32 refs.

Polar atmospheres, Atmospheric circulation, Atmospheric composition, Ozone, Polar stratospheric clouds, Global warming, Computerized simulation

50-1778

Stratospheric ozone research in Finland, focusing on atmospheric modelling.

Rummukainen, M., Kyrö, E., Isaksen, I.S.A., Stordal, F., Rognerud, B., Atmospheric ozone as a climate gas. North Atlantic Treaty Organization. Advanced Science Institutes. NATO ASI Series I, Vol.32. Edited by W.C. Wang and I.S.A. Isaksen, Berlin, Springer-Verlag, 1995, p.363-371, 16 refs.

Polar atmospheres, Atmospheric circulation, Atmospheric composition, Ozone, Research projects, Computerized simulation, Finland

50-1779

Connections between atmospheric ozone, the climate system and UV-B-radiation in the Arctic.

Taalas, P., Damski, J., Korpela, A., Koskela, T., Kyrö, E., Braathen, G., Atmospheric ozone as a climate gas. North Atlantic Treaty Organization. Advanced Science Institutes. NATO ASI Series I, Vol.32. Edited by W.C. Wang and I.S.A. Isaksen, Berlin, Springer-Verlag, 1995, p.411-426, 18 refs.

Polar atmospheres, Atmospheric circulation, Atmospheric composition, Ozone, Ultraviolet radiation, Polar stratospheric clouds, Global warming, Computerized simulation

50-1780

Ice age research. [Eiszeitforschung]

Liedtke, H., ed, Darmstadt, Germany, Wissenschaftliche Buchgesellschaft, 1990, 354p., In German and English. Refs. passim. For selected papers see 31-1634, 38-1228, 38-2251, 49-5941, and 50-1781 through 50-1796.

DLC QE697.E54 1990

Glaciation, Glacial geology, Glacial deposits, Pleistocene, Ice age theory, Periglacial processes, Geochronology, Paleoclimatology

50-1781

100 years of glacial theory and Quaternary topography of today. [100 Jahre Glazialtheorie und das Quartäre Erdbild von Heute]

Gellert, J.F., Eiszeitforschung (Ice age research). Edited by H. Liedtke, Darmstadt, Germany, Wissenschaftliche Buchgesellschaft, 1990, p.3-26, In German. Reprinted from Petermanns Geographische Mitteilungen, Vol.119, 1975, p.241-252.

Glaciation, Glacial geology, Pleistocene, Quaternary deposits, Ice age theory, Paleoclimatology

50-1782

System of climatic geomorphology based on landscape typing. [Das System der klimatischen Geomorphologie auf landschaftskundlicher Grundlage]

Hövermann, J., Eiszeitforschung (Ice age research). Edited by H. Liedtke, Darmstadt, Germany, Wissenschaftliche Buchgesellschaft, 1990, p.27-39, In German with English summary. 25 refs. Reprinted from Zeitschrift für Geomorphologie, Supplementband, Vol.56, 1985, p.143-153.

Geological surveys, Topographic surveys, Glacial geology, Periglacial processes, Nivation, Terrain identification, Deserts, Paleoclimatology

50-1783

Current status and prospects of ice age research. [Stand und Aufgabe der Eiszeitforschung]

Liedtke, H., Eiszeitforschung (Ice age research). Edited by H. Liedtke, Darmstadt, Germany, Wissenschaftliche Buchgesellschaft, 1990, p.40-54, In German. 53 refs. Adapted from Geographische Rundschau, Vol.38, 1986, p.412-419.

Glaciation, Glacial geology, Ice age theory, Pleistocene, Paleoclimatology, Global change

50-1784

Division and duration of ice age dating from global comparisons. [Gliederung und Dauer des Eiszeitalters im weltweiten Vergleich]

Brunnacker, K., Eiszeitforschung (Ice age research). Edited by H. Liedtke, Darmstadt, Germany, Wissenschaftliche Buchgesellschaft, 1990, p.55-68, In German. 12 refs.

Glaciation, Glacial geology, Glacial deposits, Marine deposits, Quaternary deposits, Pleistocene, Stratigraphy, Geochronology, Paleoclimatology

50-1785

Vegetation succession in ice age dating. [Die Vegetationsentwicklung im Eiszeitalter]

Frenzel, B., Eiszeitforschung (Ice age research). Edited by H. Liedtke, Darmstadt, Germany, Wissenschaftliche Buchgesellschaft, 1990, p.69-90, In German. 58 refs.

Plant ecology, Vegetation patterns, Revegetation, Paleobotany, Paleoecology, Pleistocene, Geochronology, Paleoclimatology

50-1786

Pleistocene Rhine terraces and their significance for division of ice age dating in central Europe. [Die pleistozänen Rheinterrassen und deren Bedeutung für die Gliederung des Eiszeitalters in Mitteleuropa]

Boenigk, W., Eiszeitforschung (Ice age research). Edited by H. Liedtke, Darmstadt, Germany, Wissenschaftliche Buchgesellschaft, 1990, p.130-140, In German. 32 refs.

Glaciation, Glacial geology, Pleistocene, Terraces, Geochronology, Paleoclimatology

50-1787

Growth and decay of the Laurentide Ice Sheet and comparisons with Fenno-Scandinavia.

Ives, J.D., Andrews, J.T., Barry, R.G., Eiszeitforschung (Ice age research). Edited by H. Liedtke, Darmstadt, Germany, Wissenschaftliche Buchgesellschaft, 1990, p.141-158, Reprinted from Naturwissenschaften, Vol.62, 1975, p.118-125, with a 1987 postscript. 74 refs. in the original and 17 additional refs. in the postscript.

Glaciation, Glacial geology, Ice sheets, Glacier oscillation, Ice age theory, Pleistocene, Geochronology, Paleoclimatology

50-1788

Distribution of ice age sediments in northern Germany. [Gliederung der eiszeitlichen Ablagerungen in Norddeutschland]
Ehlers, J., Eiszeitforschung (Ice age research). Edited by H. Liedtke, Darmstadt, Germany, Wissenschaftliche Buchgesellschaft, 1990, p.159-172, In German. Refs. p.168-172.
Glaciation, Glacial geology, Glacial deposits, Quaternary deposits, Pleistocene, Stratigraphy, Geochronology, Paleoclimatology, Germany

50-1789

Erosion of the Laurentide region of North America by glacial and glaciofluvial processes.
Bell, M., Laine, E.P., Eiszeitforschung (Ice age research). Edited by H. Liedtke, Darmstadt, Germany, Wissenschaftliche Buchgesellschaft, 1990, p.173-202, Refs. p.197-202. Reprinted from Quaternary research, Vol.23, No.2, 1985, p.154-174.
Glaciation, Glacial geology, Ice sheets, Glacial erosion, Glacial deposits, Outwash, Alluvium, Sediment transport, Pleistocene, Geochronology, Paleoclimatology

50-1790

Distribution, origin and filling of glacial overdeepened valleys: example of the Austrian Alps. [Verbreitung, Ursachen und Füllung glacial übertiefter Talabschnitte an Beispielen in den Ostalpen]
Van Husen, D., Eiszeitforschung (Ice age research). Edited by H. Liedtke, Darmstadt, Germany, Wissenschaftliche Buchgesellschaft, 1990, p.203-219, In German with English summary. 22 refs. Reprinted from Eiszeitalter und Gegenwart, Vol.29, 1979, p.9-22.
Alpine glaciation, Glacial geology, Glacial erosion, Glacial deposits, Glacier oscillation, Moraines, Sediment transport, Geochronology, Paleoclimatology, Austria

50-1791

Revision of the lateglacial Swedish varve chronology.
Strömberg, B., Eiszeitforschung (Ice age research). Edited by H. Liedtke, Darmstadt, Germany, Wissenschaftliche Buchgesellschaft, 1990, p.231-237, 32 refs. Reprinted from Boreas, Vol.14, No.2, 1985, p.101-105.
Glaciation, Glacial geology, Glacial deposits, Moraines, Outwash, Lacustrine deposits, Geochronology, Paleoclimatology, Sweden

50-1792

Ensemble of periglacial landforms in three dimensions. [Das Ensemble der periglaziären Formen in dreidimensionaler Sicht]
Karte, J., Eiszeitforschung (Ice age research). Edited by H. Liedtke, Darmstadt, Germany, Wissenschaftliche Buchgesellschaft, 1990, p.238-249, In German. 15 refs.
Periglacial processes, Permafrost origin, Permafrost distribution, Permafrost indicators, Paleoclimatology, Geomorphology

50-1793

Periglacial landforms and sediments. [Periglaziale Formen und Sedimente]
Semmel, A., Eiszeitforschung (Ice age research). Edited by H. Liedtke, Darmstadt, Germany, Wissenschaftliche Buchgesellschaft, 1990, p.250-260, In German. 41 refs.
Periglacial processes, Slope processes, Talus, Mass movements (geology), Subsidence, Cryogenic soils, Eolian soils, Sediment transport, Geomorphology, Paleoclimatology

50-1794

Loess distribution, origin, and chronology. [Lössverbreitung, Lössentstehung, Lösschronologie]
Pécsi, M., Eiszeitforschung (Ice age research). Edited by H. Liedtke, Darmstadt, Germany, Wissenschaftliche Buchgesellschaft, 1990, p.270-284, In German. 46 refs.
Loess, Eolian soils, Cryogenic soils, Soil formation, Soil dating, Soil composition, Soil profiles, Stratigraphy, Paleoclimatology

50-1795

Origin, distribution and Late Pleistocene sea level fluctuations and marine terraces. [Entstehung, Gliederung und alter pleistozäner Meeresspiegelschwankungen und Küstenterrassen]
Radtke, U., Eiszeitforschung (Ice age research). Edited by H. Liedtke, Darmstadt, Germany, Wissenschaftliche Buchgesellschaft, 1990, p.285-298, In German. 49 refs.
Marine geology, Marine deposits, Coastal topographic features, Terraces, Sea level, Pleistocene, Geochronology, Paleoclimatology

50-1796

Methods for determining the snow line. [Methoden der Schneegrenzbestimmung]
Kerschner, H., Eiszeitforschung (Ice age research). Edited by H. Liedtke, Darmstadt, Germany, Wissenschaftliche Buchgesellschaft, 1990, p.299-311, In German. 33 refs.
Glacier surveys, Glacier mass balance, Glacier oscillation, Snow ice interface, Snow line

50-1797

Complexity of Holocene climate as reconstructed from a Greenland ice core.
O'Brien, S.R., Mayewski, P.A., Meeker, L.D., Meese, D.A., Twickler, M.S., Whitlow, S.I., MP 3722, *Science*, Dec. 22, 1995, 270(5244), p.1962-1964, 44 refs.
Ice cores, Climatic changes, Atmospheric composition, Atmospheric circulation, Chemical composition, Greenland

50-1798

Near-shore Baltic ice lake deposits in Fakse Bugt, southeast Denmark.
Bennike, O., Jensen, J.B., *Boreas*, Sep. 1995, 24(3), p.185-195, 38 refs.
Pleistocene, Quaternary deposits, Lacustrine deposits, Paleobotany, Radioactive age determination, Stratigraphy, Seismic surveys, Geochronology, Baltic Sea, Denmark

50-1799

Glacial drainage towards the Mediterranean during the Middle and Late Pleistocene.
Arkhipov, S.A., Ehlers, J., Johnson, R.G., Wright, H.E., Jr., *Boreas*, Sep. 1995, 24(3), p.196-206, 55 refs.
Pleistocene, Paleoclimatology, Oceanography, Ocean currents, Salinity, Ice sheets, Glacier melting, Meltwater, Hydrologic cycle, Moisture transfer, Watersheds, Surface drainage, Mediterranean Sea

50-1800

Late Weichselian ice-sheet sensitivity over Franz Josef Land, Russian High Arctic, for numerical modelling experiments.
Siegert, M.J., Dowdeswell, J.A., *Boreas*, Sep. 1995, 24(3), p.207-224, 49 refs.
Pleistocene, Glaciology, Paleoclimatology, Ice sheets, Glacier melting, Glacier mass balance, Quaternary deposits, Isostasy, Grounded ice, Calving, Ice cover thickness, Mathematical models, Russia—Franz Josef Land

50-1801

Ability of ice-flow indicators to record complex, historic deglaciation events, Burroughs Glacier, Alaska.
Syverson, K.M., *Boreas*, Sep. 1995, 24(3), p.232-244, 56 refs.
Pleistocene, Glacier flow, Orientation, Glacial geology, Glacier melting, Bedrock, Glacial erosion, Striations, Nunataks, Periodic variations, United States—Alaska—Burroughs Glacier

50-1802

Rapid isostatic rebound in southwestern Iceland at the end of the last glaciation.
Ingólfsson, O., Norddahl, H., Haflidason, H., *Boreas*, Sep. 1995, 24(3), p.245-259, Refs. p.257-259.
Pleistocene, Marine deposits, Quaternary deposits, Stratigraphy, Radioactive age determination, Marine geology, Glacial geology, Ice sheets, Glacier oscillation, Isostasy, Sea level, Correlation, Iceland

50-1803

Involutions in the Middle Pleistocene (Anglian) Barham soil, eastern England: a comparison with thermokarst involutions from arctic Canada.

Murton, J.B., Whiteman, C.A., Allen, P., *Boreas*, Sep. 1995, 24(3), p.269-280, 47 refs.

Pleistocene, Permafrost transformation, Ground thawing, Thermokarst development, Thaw depth, Soil analysis, Soil structure, Soil mechanics, Stratigraphy, Deformation, Correlation, United Kingdom—Suffolk, Canada—Northwest Territories—Crumbling Point

50-1804

Comparison of ray and Fourier methods for modeling monostatic ground-penetrating radar.

Zeng, X.X., McMechan, G.A., Cai, J., Chen, H.W., *Geophysics*, Nov.-Dec. 1995, 60(6), p.1727-1734, 39 refs.

Geophysical surveys, Radar echoes, Soil surveys, Quaternary deposits, Soil structure, Stratification, Profiles, Wave propagation, Reflectivity, Dielectric properties, Mathematical models

50-1805

^{210}Pb-derived chronology and the fluxes of ^{210}Pb and ^{137}Cs isotopes into continental shelf sediments, East Chukchi Sea, Alaskan Arctic.

Baskaran, M., Naidu, A.S., *Geochimica et cosmochimica acta*, Nov. 1995, 59(21), p.4435-4448, 60 refs.

Oceanography, Sedimentation, Bottom sediment, Sampling, Classifications, Drill core analysis, Isotope analysis, Suspended sediments, Geochemistry, Radioactive age determination, Chukchi Sea

50-1806

Relation between soil age and silicate weathering rates determined from the chemical evolution of a glacial chronosequence.

Taylor, A., Blum, J.D., *Geology*, Nov. 1995, 23(11), p.979-982, 26 refs.

Pleistocene, Glacial deposits, Glacial geology, Moraines, Soil profiles, Soil analysis, Age determination, Weathering, Ion diffusion, Alpine glaciation, United States—Wyoming—Wind River Mountains

50-1807

Inverse relation between ice extent and the late Paleozoic glacial record of Gondwana.

González-Bonorino, G., Eyles, N., *Geology*, Nov. 1995, 23(11), p.1015-1018, 36 refs.

Pleistocene, Ice sheets, Glaciation, Glacial geology, Glacial deposits, Sedimentation, Marine deposits, Subsidence, Geochronology

The late Carboniferous-earliest Permian age estimate (300-280 Ma) for maximum ice volume during late Paleozoic glaciation of Gondwana is challenged. Past estimates assume a direct relation between extent of depositional glacial record and former ice cover; this assumption cannot be sustained, given that the glacial record is composed predominantly of glacially influenced marine strata that accumulated on the margins of ice-covered areas. Gondwana ice cover expanded in the Early Carboniferous in response to polar position, availability of moisture from a mediterranean sea, and epeirogenic uplift of the Gondwana interior. In Namurian time (ca. 325 Ma), Gondwana ice cover attained a maximum extent of about 21 x 10^6 km^2, nearly the area of maximum Pleistocene ice cover. In Stephanian-Asselian time (ca. 285 Ma), ice cover had decreased to about 15 x 10^6 km^2, but glacial marine strata were being deposited and preserved across a very large area of the Gondwana supercontinent. (Auth. mod.)

50-1808

Eocene continental climates and latitudinal temperature gradients.

Greenwood, D.R., Wing, S.L., *Geology*, Nov. 1995, 23(11), p.1044-1048, 56 refs.

Paleoclimatology, Surface temperature, Temperature gradients, Climatic changes, Global change, Global warming, Paleoecology, Heat flux, Models

50-1809

Development of methods for mapping global snow cover using Moderate Resolution Imaging Spectroradiometer data.

Hall, D.K., Riggs, G.A., Salomonson, V.V., *Remote sensing of environment,* Nov. 1995, 54(2), p.127-140, 50 refs.

Snow surveys, Snow cover distribution, Sensor mapping, Classifications, Spaceborne photography, Radiometry, Image processing, Resolution, Reflectivity, Spectra, Models, Cloud cover

50-1810

Ice and ocean processes in the Tatarskiy Strait, Japan Sea, as revealed by ERS-1 SAR.

Martin, S., Wakatsuchi, M., Ono, N., *International journal of remote sensing,* Nov. 20, 1995, 16(17), p.3227-3243, 9 refs.

Oceanography, Sea ice distribution, Ice surveys, Spaceborne photography, Synthetic aperture radar, Radiometry, Drift, Ice air interface, Air ice water interaction, Ocean currents, Wind factors, Polynyas, Salinity, Japan Sea

50-1811

Validation of backscatter models for level and deformed sea-ice in ERS-1 SAR images.

Carlström, A., Ulander, L.M.H., *International journal of remote sensing,* Nov. 20, 1995, 16(17), p.3245-3266, 27 refs.

Oceanography, Ice surveys, Sensor mapping, Spaceborne photography, Synthetic aperture radar, Radar echoes, Backscattering, Specular reflection, Ice deformation, Surface roughness, Snow cover effect, Simulation, Mathematical models

50-1812

Grid-based algorithm for the extraction of intermediate-scale sea-ice deformation descriptors from SAR ice motion products.

Li, S., Cheng, Z., Weeks, W.F., *International journal of remote sensing,* Nov. 20, 1995, 16(17), p.3267-3286, 26 refs.

Oceanography, Sea ice distribution, Surface structure, Pressure ridges, Drift, Ice openings, Spaceborne photography, Synthetic aperture radar, Ice deformation, Image processing, Statistical analysis, Data processing, Computer programs

50-1813

Effect of frost flowers, rough saline snow and slush on the ERS-1 SAT backscatter of thin arctic sea ice.

Ulander, L.M.H., Carlström, A., Askne, J., *International journal of remote sensing,* Nov. 20, 1995, 16(17), p.3287-3305, 37 refs.

Oceanography, Sea ice, Freezeup, Surface properties, Young ice, Slush, Spaceborne photography, Synthetic aperture radar, Backscattering, Topographic effects, Snow cover effect, Correlation, Mathematical models

50-1814

North-East Water polynya: satellite observations summer 1992 and 1993.

Gudmandsen, P., Thomsen, B.B., Pedersen, L.T., Skriver, H., Minnett, P.J., *International journal of remote sensing,* Nov. 20, 1995, 16(17), p.3307-3324, 19 refs.

Oceanography, Sea ice distribution, Ice surveys, Polynyas, Air ice water interaction, Spaceborne photography, Synthetic aperture radar, Radiometry, Ice floes, Drift, Fast ice, Advection, Wind factors, Statistical analysis, Arctic Ocean

50-1815

Remotely-sensed and simulated variability of arctic sea-ice concentrations in response to atmospheric synoptic systems.

Maslanik, J.A., Fowler, C., Heinrichs, J., Barry, R.G., Emery, W.J., *International journal of remote sensing,* Nov. 20, 1995, 16(17), p.3325-3342, 34 refs.

Oceanography, Sea ice distribution, Classifications, Air ice water interaction, Ice heat flux, Spaceborne photography, Synthetic aperture radar, Radiometry, Thermodynamics, Wind factors, Seasonal variations, Ice models, Simulation, Beaufort Sea

50-1816

Examination of the relation between the spring period evolution of the scattering coefficient ($\sigma°$) and radiative fluxes over landfast sea-ice.

Barber, D.G., Papakyriakou, T.N., LeDrew, E.F., Shokr, M.E., *International journal of remote sensing,* Nov. 20, 1995, 16(17), p.3343-3363, 17 refs.

Oceanography, Sea ice, Fast ice, Classifications, Air ice water interaction, Radiation balance, Spaceborne photography, Radiometry, Scattering, Snow cover effect, Statistical analysis, Snow ice interface, Seasonal variations

50-1817

C-band backscatter measurements of winter sea-ice in the Weddell Sea, Antarctica.

Drinkwater, M.R., Hosseinmostafa, R., Gogineni, P., *International journal of remote sensing,* Nov. 20, 1995, 16(17), p.3365-3389, 20 refs.

Oceanography, Sea ice distribution, Classifications, Radar echoes, Backscattering, Spaceborne photography, Synthetic aperture radar, Correlation, Air ice water interaction, Snow cover effect, Heat transfer, Antarctica—Weddell Sea

During the 1992 Winter Weddell Gyre Study, a C-band scatterometer was used from the German ice-breaker R/V *Polarstern* to obtain detailed shipborne measurement scans of antarctic sea-ice. Calibrated backscatter data were recorded for several ice types as the ice-breaker crossed the Weddell Sea and detailed measurements were made of corresponding snow and sea-ice characteristics at each measurement site, together with meteorological information, radiation budget and oceanographic data. The primary scattering contributions under cold winter conditions arise from the air/snow and snow ice interfaces. Smooth white ice found in 1992 in divergent areas within the Weddell Gyre ice pack was generally extremely smooth and undeformed. Comparisons of field scatterometer data with calibrated 20-26 incidence ERS-1 radar image data show close correspondence, and indicate that rough antarctic first-year and older second-year ice forms do not produce as distinctively different scattering signatures as observed in the Arctic. Thick deformed first-year and second-year ice on the other hand are clearly discriminated from younger undeformed ice, thereby allowing successful separation of thick and thin ice. Time-series data also indicate that C-band is sensitive to changes in snow and ice conditions resulting from atmospheric and oceanographic forcing and the local heat flux environment. Variations of backscatter occur in response to a combination of thermally-regulated parameters including sea-ice brine volume, snow and ice complex dielectric properties, and snow physical properties. (Auth. mod.)

50-1818

Iceberg observations and estimation of submarine ridges in the western Weddell Sea.

Viehoff, T., Li, A., *International journal of remote sensing,* Nov. 20, 1995, 16(17), p.3391-3408, 24 refs.

Oceanography, Sea ice distribution, Icebergs, Ice detection, Drift, Grounded ice, Ice water interface, Spaceborne photography, Synthetic aperture radar, Radiometry, Correlation, Ice cover effect, Antarctica—Weddell Sea

A number of small patches of relatively high temperatures and low reflectances were observed in the western and southwestern Weddell Sea between Oct. 1991 and Feb. 1994 by use of Advanced Very High Resolution Radiometer (AVHRR) images. From ERS-1 Synthetic Aperture Radar (SAR) data acquired during the same period these patches could be identified as high backscatter areas in the lee of small icebergs. Most of the icebergs were grounded for the entire period of observation. North of the icebergs a number of extended bands (>100 km) of high backscatter and low reflectance were detected in most of the images. These bands demonstrate the effect of the icebergs as fixed barriers on the drifting ice cover creating a perturbation in the lee of the barriers. From the analysis of the shadows created by the tabular icebergs a rough estimation of the heights of the icebergs and the corresponding draughts could be made, which were then used for an estimation of the submarine topography responsible for the grounding of the icebergs. These indirect measurements are the first made on the continental shelf off the Antarctic Peninsula. They indicate a submarine ridge of about 150 to 300 m water depth nearly perpendicular to the coastline. (Auth. mod.)

50-1819

High resolution observations of Weddell Sea surface currents using ERS-1 SAR sea-ice motion vectors.

Thomas, J.P., Turner, J., Lachlan-Cope, T.A., Corcoran, G., *International journal of remote sensing,* Nov. 20, 1995, 16(17), p.3409-3425, 16 refs.

Oceanography, Ocean currents, Spaceborne photography, Synthetic aperture radar, Sea ice distribution, Pack ice, Drift, Correlation, Air ice water interaction, Hydrography, Antarctica—Weddell Sea

Two areas of the Weddell Sea were chosen for a preliminary investigation of sea-ice motion tracking from ERS-1 Synthetic Aperture Radar (SAR) images during the austral summer. In the 3-day period between SAR images the atmosphere warmed near the surface, which led to significant changes in radar backscatter from, and thus in contrast between, ice floes and the areas between them. The tracked features were clearly identified in images which were sub-sampled at one-sixteenth of the full resolution available. In the southern Weddell Sea images, many large floes were present which allowed a quite detailed pattern of the surface water circulation to be mapped as the ice motion was predominantly forced by the ocean currents during a period of low surface wind speeds. In the western Weddell Sea images good tracers were hard to find, but it was still possible to detect the edge of the western boundary current of the Weddell Gyre. Continuous monitoring of sea-ice motion in these two areas using SAR imagery could be a useful means of detecting changes in surface water flow which may be linked to the rate of formation of antarctic bottom water. (Auth. mod.)

50-1820

Demonstration of operational sea-ice monitoring in the Baltic Sea with ERS-1 SAR.

Herland, E.A., Berglund, R., *International journal of remote sensing,* Nov. 20, 1995, 16(17), p.3427-3439, 11 refs.

Oceanography, Sea ice distribution, Icebreakers, Ice navigation, Ice surveys, Ice floes, Radar tracking, Drift, Spaceborne photography, Synthetic aperture radar, Image processing, Resolution, Baltic Sea

50-1821

Real-time use of ERS-1 SAR imagery for ice service and icebreaking operations in the Baltic Sea.

Hakansson, B., Moberg, M., Thompson, T., *International journal of remote sensing,* Nov. 20, 1995, 16(17), p.3441-3458, 9 refs.

Oceanography, Sea ice distribution, Ice conditions, Ice reporting, Ice breaking, Sensor mapping, Ice forecasting, Spaceborne photography, Synthetic aperture radar, Image processing, Resolution, Baltic Sea

50-1822

Analysis of coastal ice cover using ERS-1 SAR data.

Leshkevich, G., Pichel, W., Clemente-Colon, P., Carey, R., Hufford, G., *International journal of remote sensing,* Nov. 20, 1995, 16(17), p.3459-3479, 20 refs.

Sea ice distribution, Lake ice, Ice surveys, Classifications, Spaceborne photography, Synthetic aperture radar, Image processing, Icebergs, Ice detection, Ice forecasting, Beaufort Sea, United States—Superior, Lake

50-1823

Effect of aging on the penetration resistance of sands.

Joshi, R.C., Achari, G., Kaniraj, S.R., Wijeweera, H., *Canadian geotechnical journal,* Oct. 1995, 32(5), p.767-782, With French summary. 17 refs.

Soil tests, Soil strength, Soil physics, Penetration tests, Sands, Bottom sediment, Freeze thaw tests, Time factor

50-1824

Undrained shear strength for liquefaction flow failure analysis.

Konrad, J.M., Watts, B.D., *Canadian geotechnical journal,* Oct. 1995, 32(5), p.783-794, With French summary. 50 refs.

Earthwork, Embankments, Artificial islands, Slope stability, Hydraulic fill, Soil strength, Shear strength, Mechanical tests, Noncohesive soils, Shear strength

50-1825

Predicting creep settlements of foundations in permafrost from the results of cone penetration tests.

Ladanyi, B., Lunne, T., Vergobbi, P., Lhuillier, B., *Canadian geotechnical journal,* Oct. 1995, 32(5), p.835-847, With French summary. 27 refs.

Foundations, Permafrost bases, Penetration tests, Pile load tests, Bearing strength, Strains, Frozen ground settling, Soil creep, Soil temperature, Temperature effects, Forecasting

50-1826

Spatial and temporal variability of phytoplankton biomass and taxonomic composition around Elephant Island, Antarctica, during the summers of 1990-1993.

Villafañe, V.E., Helbling, E.W., Holm-Hansen, O., *Marine biology,* Oct. 1995, 123(4), p.677-686, 67 refs.

Marine biology, Plankton, Biomass, Distribution, Seasonal variations, Classifications, Sampling, Antarctica—Elephant Island

This paper describes the distribution of phytoplankton biomass and taxonomic composition in the vicinity of Elephant I. throughout the Antarctic Marine Living Resources study grid over a period of 4 yr (1990-1993), with emphasis on intra- and inter-annual variability in the phytoplankton assemblages. (Auth. mod.)

50-1827

Pelagic bryozoan from Antarctica.

Peck, L.S., Hayward, P.J., Spencer-Jones, M.E., *Marine biology,* Oct. 1995, 123(4), p.757-762, 27 refs.

Marine biology, Microbiology, Ecology, Biomass, Sampling, Structural analysis, Classifications, Ice edge, Polynyas, Algae, Antarctica—Weddell Sea

This paper describes an unattached colony form in a species of *Alcyonidium* from the Weddell Sea, an extraordinary, thin-walled, hollow sphere with an apparently pelagic habit, and considers its relationship to the benthic attached *A. flabelliforme.* (Auth. mod.)

50-1828

Accumulation rates of coarse-grained terrigenous sediment in the Norwegian-Greenland Sea: signals of continental glaciation.

Goldschmidt, P.M., *Marine geology,* Nov. 1995, 128(3-4), p.137-151, 55 refs.

Oceanographic surveys, Pleistocene, Paleoclimatology, Glacier oscillation, Bottom sediment, Sedimentation, Ice rafting, Icebergs, Drill core analysis, Radioactive age determination, Correlation, Norwegian Sea, Greenland Sea

50-1829

Arsenic, trace metals, and organic micro contaminants in sediments from the Pechora Sea, Russia.

Loring, D.H., Næs, K., Dahle, S., Matishov, G.G., Illin, G., *Marine geology,* Nov. 1995, 128(3-4), p.153-167, 41 refs.

Oceanographic surveys, Bottom sediment, Profiles, Sampling, Geochemistry, Water pollution, Metals, Hydrocarbons, Environmental tests, Chemical analysis, Statistical analysis, Russia—Pechora Sea

50-1830

Sea ice scouring on the inner shelf of the southeastern Canadian Beaufort Sea.

Héquette, A., Desrosiers, M., Barnes, P.W., *Marine geology,* Nov. 1995, 128(3-4), p.201-219, 49 refs.

Marine geology, Ice floes, Ice scoring, Ice push, Orientation, Ice solid interface, Ocean bottom, Surface structure, Sounding, Acoustic measurement, Profiles, Beaufort Sea

50-1831

Soil polygenesis as a function of Quaternary climate change, northern Great Basin, USA.

Chadwick, O.A., Nettleton, W.D., Staidl, G.J., *Geoderma,* Sep. 1995, 68(1-2), p.1-26, 57 refs.

Soil formation, Soil physics, Water balance, Moisture transfer, Leaching, Quaternary deposits, Pleistocene, Paleoclimatology, Climatic changes, Glacial deposits, Sampling, Physical properties, United States—Nevada—Ruby Mountains

50-1832

Late Wisconsinan glaciomarine deposition and isostatic rebound, northern Puget Lowland, Washington.

Dethier, D.P., Pessl, F., Jr., Keuler, R.F., Balzarini, M.A., Pevear, D.R., *Geological Society of America. Bulletin,* Nov. 1995, 107(11), p.1288-1303, 82 refs.

Pleistocene, Paleoecology, Ice sheets, Glacier oscillation, Marine geology, Glacial deposits, Marine deposits, Stratigraphy, Calving, Isostasy, Sampling, Radioactive age determination, United States—Washington—Puget Lowland

50-1833

Structural history of the Chugach metamorphic complex in the Tana River region, eastern Alaska: a record of Eocene ridge subduction.

Pavlis, T.L., Sisson, V.B., *Geological Society of America. Bulletin,* Nov. 1995, 107(11), p.1333-1355, Refs. p.1354-1355.

Geologic structures, Tectonics, Rock properties, Lithology, Sampling, Glacial geology, Ice edge, United States—Alaska—Tana Glacier

50-1834

Corrections to "Inferring snow wetness using C-band data from SIR-C's polarimetric synthetic aperture radar".

Shi, J.C., Dozier, J., *IEEE transactions on geoscience and remote sensing,* Nov. 1995, 33(6), p.1340, 1 ref. For relevant paper see 49-6141.

Snow hydrology, Wet snow, Remote sensing, Synthetic aperture radar, Radar echoes

50-1835

Isolation and identification of antifreeze protein with high activity in *Ammopiptanthus mongolicus.*

Fei, Y.B., Sun, L.H., Huang, T., Shu, N.H., Gao, S.Q., Jian, L.C., *Acta botanica sinica,* 1994, 36(8), p.649-650, In Chinese with English summary. 8 refs.

Plant physiology, Plants (botany), Acclimatization, Plant tissues, Antifreezes, Freezing points, Cryobiology, Ice crystal structure, Electron microscopy

50-1836

Briksdalsbreen, western Norway: climatic effects on the terminal response of a temperate glacier between AD 1901 and 1994.

Nesje, A., Johannessen, T., Birks, H.J.B., *Holocene,* Sep. 1995, 5(3), p.343-347, 21 refs.

Glacial hydrology, Glacier mass balance, Glacier oscillation, Periodic variations, Climatic changes, Air temperature, Snow accumulation, Correlation, Norway—Briksdalsbreen

50-1837

Measurement of seismo-acoustic ocean-bottom properties in the high Arctic.

Dosso, S.E., Brooke, G.H., *Acoustical Society of America. Journal,* Sep. 1995, 98(3), p.1657-1666, 21 refs.

Oceanography, Ocean bottom, Bottom sediment, Underwater acoustics, Ice acoustics, Subglacial observations, Seismic refraction, Sound transmission, Wave propagation, Attenuation, Velocity measurement, Correlation

50-1838

Basic principles of designing hydraulic-fill ash storages located in the northern construction-climatic zone.

Koritova, I.V., Krivonogova, N.F., *Hydrotechnical construction,* Oct. 1995, 29(4), p.219-226, Translated from Gidrotekhnicheskoe stroitel'stvo. 8 refs.

Electric power, Waste disposal, Hydraulic fill, Cold storage, Embankments, Geocryology, Soil stabilization, Freeze thaw cycles, Cold weather construction, Permafrost transformation, Permafrost bases, Frozen ground mechanics, Stratification, Design criteria

50-1839

Estimation of burial depths for pipelines in arctic regions.

Chouinard, L.E., *Journal of cold regions engineering,* Dec. 1995, 9(4), p.167-182, 18 refs.

Underground pipelines, Ice scoring, Hydraulic structures, Pipe laying, Offshore structures, Petroleum industry, Mathematical models

50-1840

Intermittent-discharge lagoons for use in cold regions.

Prince, D.S., Smith, D.W., Stanley, S.J., *Journal of cold regions engineering,* Dec. 1995, 9(4), p.183-194, 5 refs.

Waste treatment, Sewage treatment, Cold weather operation, Cold weather performance, Ice cover effect, Lagoons

50-1841

Flowthrough rockfill embankments: behavior in subzero temperatures.

Hansen, D., Garga, V.K., Townsend, D.R., *Journal of cold regions engineering,* Dec. 1995, 9(4), p.195-218, 20 refs.

Dams, Rock fills, Low temperature tests, Thermocouples, Ice growth, Heat flux, Ice formation, Analysis (mathematics), Heat loss, Heat transfer coefficient, Embankments

50-1842

Overview of recent program on mechanical properties of sea ice.

Cole, D.M., et al, MP 3723, *Journal of cold regions engineering,* Dec. 1995, 9(4), p.219-234, 22 refs.

Sea ice, Ice creep, Ice mechanics, Ice physics, Ice loads, Ice cover thickness, Ice growth, Ice salinity, Ice structure

50-1843

Quaternary processes in eastern China and international correlation. [Zhongguo dongbu disiji jincheng yu guoji duibi]

Yang, Z.G., Lin, H.M., Chinese Working Group contribution to IGCP (International Geological Correlation Programme), No.218, Beijing, Dizhi chubanshe (Geology Press), 1993, 125p., In Chinese. Refs. p.115-125 of which p.123-125 are English refs.

Geological surveys, Marine geology, Marine deposits, Pleistocene, Quaternary deposits, Stratigraphy, Geochronology, Paleoecology, Paleoclimatology, China

50-1844

Late Pleistocene environment of north China. [Zhongguo beifang wan gengxinshi huanjing]

Zheng, H.H., et al, Chongqing, Chongqing chubanshe (Chongqing Publishing House), 1991, 203p., In Chinese with abridged English version p.151-200. 81 refs.

DLC QE720.C48 1991 Orien China

Geological surveys, Stratigraphy, Quaternary deposits, Lacustrine deposits, Alluvium, Loess, Geochemistry, Soil dating, Pleistocene, Geochronology, Paleoecology, Paleoclimatology, China

50-1845

Salt lakes of Qaidam Basin. [Chaidamu pendi yanhu]

Zhang, P.X., et al, Beijing, Kexue chubanshe (Science Press), 1987, 235p., In Chinese. 42 refs.

DLC QH181.C43 1987 Orien China

Salt lakes, Limnology, Exploration, Lacustrine deposits, Bottom sediment, Water chemistry, Geochemistry, Hydrogeochemistry, Minerals, Brines, China—Qaidam Basin

50-1846

Rivers and lakes of Xizang. [Xizang heliu yu hupo]

Guan, Z.H., et al, Zhongguo kexueyuan Qingzang gaoyuan zonghe kexue kaochadui (Chinese Academy of Sciences. Comprehensive Scientific Expedition to the Qinghai-Xizang Plateau), Beijing, Kexue chubanshe (Science Press), 1984, 238p., In Chinese with English table of contents. 37 refs.

DLC GB1738.T55H75 1984 Orien China

Rivers, Lakes, Hydrography, Limnology, Water reserves, Topographic surveys, Exploration, China—Xizang

50-1847

Marine Late Cretaceous and Early Tertiary stratigraphy and petroleum geology in western Tarim Basin, China. [Xinjiang Talimu pendi xibu baieji zhi zao disanji haixiang diceng ji hanyouxing]

Tang, T.F., et al, Beijing, Kexue chubanshe (Science Press), 1989, 155p. + plates, In Chinese with extended English summary p.133-140. Refs. p.130-132.

DLC QE688.H75 1989 Orien China

Geological surveys, Exploration, Marine geology, Marine deposits, Stratigraphy, Paleoecology, Fossils, Crude oil, Natural gas, China—Tarim Basin

50-1848

Salt lakes in Xizang. [Xizang yanhu]

Zheng, X.Y., Tang, Y., Xu, C., Li, B.X., Zhang, B.Z., Yu, S.S., Zhongguo kexueyuan Qingzang gaoyuan zonghe kexue kaochadui congshu (Series of the Chinese Academy of Sciences. Comprehensive Scientific Expedition to the Qinghai-Xizang Plateau), Beijing, Kexue chubanshe (Science Press), 1988, 190p., In Chinese with English table of contents. 89 refs.

DLC QH95.9.H75 1988 Orien China

Salt lakes, Limnology, Lacustrine deposits, Bottom sediment, Water chemistry, Hydrogeochemistry, Exploration, Minerals, Brines, China—Xizang

50-1849

Salt lakes of Inner Mongolia. [Nei Menggu yanhu]

Zheng, X.Y., et al, Beijing, Kexue chubanshe (Science Press), 1992, 295p., In Chinese with English table of contents. 52 refs.

DLC QH95.9.N45 1992 Orien China

Salt lakes, Limnology, Hydrography, Lacustrine deposits, Bottom sediment, Geochemistry, Water chemistry, Hydrogeochemistry, Exploration, Minerals, Brines, China—Inner Mongolia

50-1850

Research on clay minerals in salt lakes of China. [Zhongguo yanhu niantu kuangwu yanjiu]

Xu, C., Beijing, Kexue chubanshe (Science Press), 1993, 208p., In Chinese. 51 refs.

DLC QE389.625.H78 1993 Orien China

Salt lakes, Limnology, Lacustrine deposits, Bottom sediment, Clay minerals, Exploration, Geological surveys, Geochemistry, Hydrogeochemistry, China

50-1851

Desertification and its control in China. [Zhongguo de shamohua ji qi zhili]

Zhu, Z.D., Liu, S., Di, X.M., Beijing, Kexue chubanshe (Science Press), 1989, 126p. + plates, In Chinese with extended English summary p.123-126 and table of contents. Refs. passim.

DLC GB618.7.C493 1989 Orien China

Deserts, Desert soils, Steppes, Wind erosion, Soil erosion, Soil conservation, Land reclamation, Desiccation, Climatic changes, China

50-1852

Winter storms over Canada.

Stewart, R.E., et al, *Atmosphere-ocean,* June 1995, 33(2), p.223-247, With French summary. Refs. p.244-247.

Precipitation (meteorology), Fronts (meteorology), Climatology, Snowstorms, Synoptic meteorology, Atmospheric circulation, Turbulent boundary layer, Temperature effects, Canada

50-1853

Hydrometeorological aspects of flood hazards in Canada.

Lawford, R.G., Prowse, T.D., Hogg, W.D., Warkentin, A.A., Pilon, P.J., *Atmosphere-ocean,* June 1995, 33(2), p.303-328, With French summary. Refs. p.325-328.

Flooding, Classifications, Flood forecasting, Runoff forecasting, Precipitation (meteorology), Snowmelt, Runoff forecasting, Ice jams, Statistical analysis, Climatic changes, Countermeasures, Canada

50-1854

Storm surges in Canadian waters.

Murty, T.S., Venkatesh, S., Danard, M.B., El-Sabh, M.I., *Atmosphere-ocean,* June 1995, 33(2), p.359-387, With French summary. Refs. p.384-387.

Climatology, Storms, Estuaries, Water transport, Sea level, Sea ice, Ice cover effect, Air water interactions, Turbulent boundary layer, Wind factors, Mathematical models, Beaufort Sea

50-1855

Hydrogen bond interaction between self-assembled monolayers and adsorbed water molecules and its implications for cluster formation.

Engquist, I., Lestelius, M., Liedberg, B., *Journal of physical chemistry,* Sep. 28, 1995, 99(39), p.14198-14200, 27 refs.

Ice physics, Deuterium oxide ice, Ice structure, Molecular structure, Hydrogen bonds, Adsorption, Ice solid interface, Infrared spectroscopy, Ice spectroscopy, Phase transformations

50-1856

Permafrost on the Tibet Plateau, China.

Wang, B.L., French, H.M., *Quaternary science reviews,* Apr. 1995, 14(3), p.255-274, Refs. p.271-274.

Permafrost surveys, Geocryology, Permafrost distribution, Permafrost physics, Permafrost transformation, Periglacial processes, Classifications, Pleistocene, China—Tibet

50-1857

New indicator of glacial dispersal: lead isotopes.

Bell, K., Murton, J.B., *Quaternary science reviews,* Apr. 1995, 14(3), p.275-287, 39 refs.

Pleistocene, Quaternary deposits, Glacial deposits, Bedrock, Isotope analysis, Glacial geology, Sediment transport, Geochemistry

50-1858

Ice-proximal glaciomarine sedimentation and sea-level changes in the Inverness area, Scotland: a review of the deglaciation of a major ice stream of the British Late Devensian ice sheet.

Merritt, J.W., Auton, C.A., Firth, C.R., *Quaternary science reviews,* Apr. 1995, 14(3), p.289-329, Refs. p.324-229.

Pleistocene, Quaternary deposits, Glacial deposits, Sedimentation, Stratigraphy, Marine geology, Glacial geology, Glacier oscillation, Ice rafting, Sea level, United Kingdom—Scotland

50-1859

Composition and construction of late Pleistocene end moraines, Durango, Colorado.

Johnson, M.D., Gillam, M.L., *Geological Society of America. Bulletin,* Oct. 1995, 107(10), p.1241-1253, 35 refs.

Pleistocene, Glacial geology, Moraines, Quaternary deposits, Sedimentation, Sediment transport, Geomorphology, Stratigraphy, Soil analysis, United States—Colorado—Durango

50-1860

Cryovolcanism on the icy satellites.

Kargel, J.S., *Earth, moon, and planets,* 1994-1995, 67(1-3), p.101-113, 32 refs.

Extraterrestrial ice, Satellites (natural), Geocryology, Rheology, Volcanoes, Magma, Ice composition, Geologic processes, Geomorphology, Terrain identification, Remote sensing

50-1861

Ski slope vegetation in central Honshu, Japan.

Tsuyuzaki, S., *Environmental management,* Sep.-Oct. 1995, 19(5), p.773-777, 22 refs.

Alpine landscapes, Ecosystems, Revegetation, Environmental protection, Vegetation patterns, Classifications, Japan—Honshu

50-1862

Reversal of the air-water gas exchange direction of hexachlorocyclohexanes in the Bering and Chukchi Seas: 1993 versus 1988.

Jantunen, L.M., Bidleman, T.F., *Environmental science & technology,* Apr. 1995, 29(4), p.1081-1089, 34 refs.

Oceanography, Atmospheric composition, Air pollution, Water pollution, Sampling, Aerosols, Hydrocarbons, Vapor transfer, Air water interactions, Periodic variations, Mass transfer, Environmental tests, Bering Sea, Chukchi Sea

50-1863

Chemical characterization of crude oil residues from an arctic beach by GC/MS and GC/FID.

Wang, Z.D., Fingas, M., Serby, G., *Environmental science & technology,* Oct. 1995, 29(10), p.2622-2631, 31 refs.

Oceanography, Beaches, Soil pollution, Crude oil, Oil spills, Simulation, Environmental tests, Degradation, Weathering, Microbiology, Chemical analysis, Canada—Northwest Territories—Baffin Island

50-1864

Ubiquitous tar balls with a California-source signature on the shorelines of Prince William Sound, Alaska.

Kvenvolden, K.A., Hostettler, F.D., Carlson, P.R., Rapp, J.B., Threlkeld, C.N., Warden, A., *Environmental science & technology,* Oct. 1995, 29(10), p.2684-2694, 24 refs.

Oceanography, Oil spills, Beaches, Crude oil, Sediments, Origin, Sediment transport, Environmental tests, Geochemistry, Chemical analysis, United States—Alaska—Prince William Sound

50-1865

Use of planimetric surface area in glacier mass-balance calculations: a potential source of errors.

Jacobsen, F.M., Theakstone, W.H., *Journal of glaciology,* 1995, 41(139), p.441-444, 16 refs.

Glaciology, Glacier mass balance, Ice volume, Measurement, Photogrammetry, Accuracy, Ice surface, Topographic features

50-1866

On the age vs depth and optical clarity of deep ice at the South Pole.

AMANDA Collaboration, *Journal of glaciology,* 1995, 41(139), p.445-454, 46 refs.

Glaciology, Glacier ice, Radiation absorption, Optical properties, Gamma irradiation, Photometry, Light scattering, Ice cores, Age determination, Chemical properties, Impurities, Ice crystal structure, Gas inclusions, Aerosols, Antarctica—Byrd Station, Antarctica—Vostok Station, Antarctica—Amundsen-Scott Station

The first four strings of phototubes for the AMANDA high-energy neutrino observatory are now frozen in place at a depth of 800-1000 m in ice at the South Pole. During the 1995-96 season, as many as six more strings will be deployed at greater depths. Provided absorption, scattering and refraction of visible light are sufficiently small, the trajectory of a muon into which a neutrino converts can be determined by using the array of phototubes to measure the arrival times of Cherenkov light emitted by the muon. To help in deciding on the depth for implantation of the six new strings, models of age vs depth for South Pole ice are discussed. Mean free paths for scattering from bubbles and dust as a function of depth are estimated and distortion of light paths due to refraction at crystal boundaries and interfaces between air-hydrate inclusions and normal ice are assessed. It is concluded that the interval 1600-2100 m will be suitably transparent for a future 1 km^3 observatory except possibly in a region a few tens of meters thick at a depth corresponding to a peak in the dust concentration at 60 k year BP. (Auth. mod.)

50-1867

Reduction of weather effects in the calculation for sea-ice concentration with the DMSP SSM/I.

Cavalieri, D.J., St. Germain, K.M., Swift, C.T., *Journal of glaciology,* 1995, 41(139), p.455-464, 10 refs.

Sea ice distribution, Mapping, Spaceborne photography, Radiometry, Resolution, Ice detection, Ice edge, Image processing, Meteorological factors, Water vapor, Radiance, Attenuation

A problem in mapping the sea-ice covers in both the Arctic and Antarctic has been the sporadic false indication of sea ice over the open ocean and at the ice edge. These spurious sea-ice concentrations result from variations in sea-surface roughening by surface winds, atmospheric water vapor and both precipitating and non-precipitating liquid water. This problem was addressed for sea-ice concentrations derived from the Nimbus-7 scanning multi-channel microwave radiometer (SMMR) data through the development of a weather filter based on spectral information from the vertical polarization SMMR channels. Application of a similar filter for use with sea-ice concentration maps derived with the special-sensor microwave imager (SSM/I) sensor is less successful. The SSM/I 19.35 GHz channels are more sensitive to changes in atmospheric water vapor, which results in greater contamination problems. An additional filter has been developed, based on a combination of SSM/I channels. Examples of the effectiveness of the new filter are presented and limitations are discussed. (Auth. mod.)

50-1868

Anomalous glacier responses to 20th century climatic changes in Darwin Cordillera, southern Chile.

Holmlund, P., Fuenzalida, H., *Journal of glaciology,* 1995, 41(139), p.465-473, 22 refs.

Glaciology, Glacier oscillation, Glacier mass balance, Climatic changes, Global warming, Aerial surveys, Oblique photography, Topographic effects, Wind factors, Ice air interface, Chile—Darwin Cordillera

50-1869

Sub-surface melting in a seasonal snow cover.

Koh, G., Jordan, R., MP 3724, *Journal of glaciology,* 1995, 41(139), p.474-482, 22 refs.

Snow cover stability, Snow hydrology, Snow physics, Snowmelt, Snow thermal properties, Mass balance, Snow water content, Wet snow, Insolation, Radiation absorption, Subsurface investigations, Radar echoes, Mathematical models

The ability of solar radiation to penetrate into a snow cover combined with the low thermal conductivity of snow can lead to a sub-surface temperature maximum. This elevated sub-surface temperature allows a layer of wet snow to form below the surface even on days when the air temperature remains sub-freezing. A high-resolution frequency-modulated continuous wave radar has been used to detect the onset of sub-surface melting in a seasonal snow cover. The experimental observation of sub-surface melting is shown to be in good agreement with the predictions of a one-dimensional mass- and energy-balance model. The effects of varying snow characteristics and solar extinction parameters on the sub-surface melt characteristics are investigated using model simulations.

50-1870

Topographic origin for double-ridge features in visible imagery of ice divides in Antarctica.

Goodwin, A.H., Vaughan, D.G., *Journal of glaciology,* 1995, 41(139), p.483-489, 18 refs.

Glaciology, Ice sheets, Surface structure, Slope orientation, Pressure ridges, Spaceborne photography, LANDSAT, Photointerpretation, Topographic effects, Brightness, Antarctica—Fletcher Ice Rise, Antarctica—Korff Ice Rise

The appearance of double-ridge features on visible imagery of the ice divides of antarctic ice rises has often been noted but, largely due to a lack of adequate ground truth, their origins have remained enigmatic. This paper presents several examples of ice rises and other isolated ice-flow centers that apparently show double ridges, including Fletcher Promontory. A digital-elevation model (DEM) of the summit region is derived from surface profiles obtained using the Global Positioning System (GPS) and this is correlated with Landsat MMS satellite imagery. Precise registration is achieved by correlating image-brightness values with surface slope calculated along the direction of the Sun azimuth in the image. Using a simple bi-directional relation, the DEM data are used to model the Landsat image. This demonstrated that the double ridge is a product of a subtle concavity parallel to the ridge and is unlikely to be dependent on other factors. This concavity is not predicted by steady-state models of ice divides. The ridge may not be in a steady-state but responding to changes in the glaciological boundary conditions, an indication of ongoing migration of the ice divide. (Auth. mod.)

50-1871

Radiative fluxes and their impact on the energy balance of the Greenland ice sheet.

Konzelmann, T., Ohmura, A., *Journal of glaciology,* 1995, 41(139), p.490-502, 30 refs.

Glaciology, Glacial meteorology, Ice sheets, Insolation, Surface energy, Radiation balance, Albedo, Cloud cover, Ice air interface, Seasonal variations, Models, Greenland

50-1872

Changes in continental and sea-salt atmospheric loadings in central Greenland during the most recent deglaciation: model-based estimates.

Alley, R.B., et al, *Journal of glaciology,* 1995, 41(139), p.503-514, 53 refs.

Glaciology, Paleoclimatology, Ice sheets, Ice cores, Sampling, Atmospheric composition, Aerosols, Fallout, Impurities, Solubility, Ion density (concentration), Ice air interface, Models, Greenland

50-1873

Glacio-meteorological and isotopic studies along the EGIG line, central Greenland.

Fischer, H., Wagenbach, D., Laternser, M., Haeberli, W., *Journal of glaciology,* 1995, 41(139), p.515-527, 36 refs.

Glaciology, Glacier surveys, Ice sheets, Glacial meteorology, Climatology, Isotope analysis, Water vapor, Snow accumulation, Firn, Temperature variations, Profiles, Snow air interface, Seasonal variations, Greenland

50-1874

Triaxial experiments on iceberg and glacier ice.

Gagnon, R.E., Gammon, P.H., *Journal of glaciology,* 1995, 41(139), p.528-540, 24 refs.

Glaciology, Icebergs, Glacier ice, Ice cores, Ice strength, Ice mechanics, Impact tests, Dynamic loads, Ice solid interface, Stress concentration, Cracking (fracturing), Temperature effects, Compressive properties

50-1875

Ice-thickness measurements of Taku Glacier, Alaska, U.S.A., and their relevance to its recent behavior.

Nolan, M., Motkya, R.J., Echelmeyer, K., Trabant, D.C., *Journal of glaciology,* 1995, 41(139), p.541-553, 29 refs.

Glaciology, Glacier mass balance, Glacier thickness, Glacier oscillation, Radio echo soundings, Seismic reflection, Profiles, Ice mechanics, Glacial erosion, United States—Alaska—Taku Glacier

50-1876

Hydraulic run-away: a mechanism for thermally regulated surges of ice sheets.

Fowler, A.C., Johnson, C., *Journal of glaciology,* 1995, 41(139), p.554-561, 29 refs.

Glaciology, Ice mechanics, Glacier flow, Glacier surges, Glacial hydrology, Meltwater, Ice solid interface, Ice heat flux, Sliding, Shear stress, Mathematical models

By using a simple parameterized model of thermomechanically coupled flow in cold ice sheets, together with a physically based sliding law which includes a description of basal drainage, it is shown that relationships between ice flux and ice thickness can be multi-valued, and hence that hydraulically induced surges can occur. This mechanism is termed hydraulic run-away, as it relies on the positive feedback between sliding velocity and basal melt production. For this feedback to operate, it is essential that water pressure increases with water storage. This is consistent with various recent ideas concerning drainage under ice sheets, be it through a system of canals, a distributed film or a subglacial aquifer. For confined flows, such as valley glaciers (e.g. Trapridge Glacier) or topographically constrained ice streams (e.g. Hudson Strait in the Laurentide ice sheet), which are underlain by sufficiently deformable sediment, thermally regulated surges are expected, while in a laterally unconfined drainage basin (such as that which flows into the Ross Ice Shelf), ice streams may develop. (Auth. mod.)

50-1877

Aerodynamic stability and turbulent sensible-heat flux over a melting ice surface, the Greenland ice sheet.

Braithwaite, R.J., *Journal of glaciology,* 1995, 41(139), p.562-571, 70 refs.

Glaciology, Ice sheets, Ice heat flux, Glacier melting, Turbulent diffusion, Ice air interface, Air flow, Wind velocity, Stability, Heat balance, Surface roughness, Greenland

50-1878

Borehole water-level variations and the structure of the subglacial hydrological system of Haut Glacier d'Arolla, Valais, Switzerland.

Hubbard, B.P., Sharp, M.J., Willis, I.C., Nielsen, M.K., Smart, C.C., *Journal of glaciology,* 1995, 41(139), p.572-583, 40 refs.

Glaciology, Glacial hydrology, Glacier melting, Boreholes, Water pressure, Subglacial drainage, Diurnal variations, Hydraulics, Ice water interface, Switzerland—Haut Glacier d'Arolla

50-1879

Mapping tide-water glacier dynamics in East Greenland using Landsat data.

Dwyer, J.L., *Journal of glaciology,* 1995, 41(139), p.584-595, 38 refs.

Glaciology, Ice sheets, Glacier mass balance, Glacier oscillation, Glacier flow, Velocity measurement, Spaceborne photography, LANDSAT, Photointerpretation, Sensor mapping, Greenland—Kangerdlugssuaq Fjord

50-1880

Recent drumlins, flutes and lineations at Vestari-Hagafellsjökull, Iceland.

Hart, J.K., *Journal of glaciology,* 1995, 41(139), p.596-606, 46 refs.

Glacial geology, Geomorphology, Glacier beds, Glacial deposits, Lithology, Sediment transport, Glacial erosion, Deformation, Ice solid interface, Iceland

50-1881

Measuring geophysical parameters of the Greenland ice sheet using airborne radar altimetry.

Ferraro, E.J., Swift, C.T., *Journal of glaciology,* 1995, 41(139), p.607-618, 27 refs.

Glaciology, Ice sheets, Airborne radar, Height finding, Radar echoes, Scattering, Wave propagation, Snow optics, Surface roughness, Mathematical models, Greenland

50-1882

Investigation of the deforming layer/debris-rich basal-ice continuum, illustrated from three Alaskan glaciers.

Hart, J.K., *Journal of glaciology,* 1995, 41(139), p.619-633, 57 refs.

Glaciology, Glacial geology, Glacier beds, Glacier flow, Basal sliding, Sediment transport, Deformation, Ice solid interface, Frozen ground mechanics, United States—Alaska—Childs Glacier, United States—Alaska—Natanuska Glacier, United States—Alaska—Exit Glacier

50-1883

Theory of lattice Boltzmann simulations of glacier flow.

Bahr, D.B., Rundle, J.B., *Journal of glaciology,* 1995, 41(139), p.634-640, 25 refs.

Glaciology, Glacier flow, Fluid flow, Ice mechanics, Velocity measurement, Statistical analysis, Simulation, Latticed structures, Mathematical models, Theories

50-1884

How important is late Cenozoic tectonic and volcanic activity in the west antarctic rift system on the dynamics of the west antarctic ice sheet?

Behrendt, J.C., et al, *Antarctic journal of the United States,* 1994, 29(5), p.7-8, 14 refs.

Tectonics, Glacial geology, Glaciation, Volcanoes, Topographic surveys, Ice sheets, Sounding, Rheology, Antarctica—Transantarctic Mountains

The asymmetric rift system is marked by a 3,000-km long, 4- to 5-km high rift shoulder escarpment which extends along the Transantarctic Mountains from northern Victoria Land to the Horlick Mountains, thence to the Ellsworth Mountains. Behrendt and Cooper (1991) suggested that episodic uplift rates of the order approximately 1 km per million years of the highest sections of the rift shoulder might have a climate-forcing effect on antarctic glaciation; the onset of Late Cenozoic rift activity and antarctic glaciation are approximately coincident. It is suggested that this interpretation is controversial. Seismic-reflection and radar ice-sounding data are interpreted as indicating glacial erosion of volcanic peaks erupted beneath the ice sheet in several places, suggesting this is a general case. Behrendt and Cooper (1991) suggest a possible synergistic relationship between the high uplift rate of the rift shoulder and antarctic glaciation which is generally coincident in Late Cenozoic time.

50-1885

Geochemistry of a layer of volcanic ash in the ice near Brimstone Peak, southern Victoria Land.

Faure, G., Mensing, T.M., Manson, V.L., Place, M.C., *Antarctic journal of the United States,* 1994, 29(5), p.22-23, 10 refs.

Glacial geology, Volcanic ash, Ice composition, Impurities, Antarctica—Brimstone Peak

During the 1992-93 field season, a block of ice (27x42x24 cm) containing a dust layer was cut with a chainsaw from an exposure of ice in the valley between Brimstone Peak and Griffin Nunatak. The dust layer (about 2 cm thick) is one of at least three layers that occur at this site at intervals that range from 20 to 164 m. The block of ice

was placed inside a new plastic bag and shipped frozen in a rock box to the continental United States for laboratory study. Some of the results are discussed and shown in a figure.

50-1886

Stability of antarctic blue icefields over the last 300,000 years: meteorites as surface exposure markers.

Benoit, P.H., Roth, J., Sears, H., Sears, D.W.G., *Antarctic journal of the United States,* 1994, 29(5), p.51-53, 9 refs.

Moraines, Ice sheets, Stability, Ice surface, Glacier ablation

Bare "blue" icefields are found in the inland portions of the antarctic ice sheet. The ablation of deep ice on these icefields sometimes results in the accumulation of entrained rocks on the ice surface, and the composition of these "moraines" can be indicative of regional iceflow dynamics. Among the rocks in the moraines are sometimes found meteorites; at some icefields, meteorites are the most common type of morainal specimen, with hundreds of meteorite fragments collected on the ice surface. Using the activity of cosmogenic radionuclides, one can determine how long each individual meteorite has been on Earth, that is, its terrestrial age. In this article, the authors discuss the use of thermoluminescence of antarctic meteorites to determine how long individual meteorites have been exposed on the ice surface as opposed to being buried within the ice, that is, a surface exposure age. These data, coupled with terrestrial age data, permit study of the stability of the icefields on which the meteorites were found over the last 500,000 years or so.

50-1887

Measurements of ice thickness and related studies on the Lewis Cliff Ice Tongue, 1993-1994.

Echelmeyer, K., Cassidy, W., Schutt, J., *Antarctic journal of the United States,* 1994, 29(5), p.53-55, 2 refs.

Ice cover thickness, Flow rate, Ice surface, Antarctica—Lewis Cliff

The Lewis Cliff Ice Tongue is a 2x10 km patch of exposed ice that terminates in a large moraine below Mount Achernar. The authors have recovered approximately 2,000 meteorite specimens on this and adjacent ice surfaces, with the highest concentration located on the ice tongue itself; therefore, they are interested in characterizing this ice tongue with a view to learning its origin and history. Specifically, during the early part of the 1993-94 field season, they were interested in the transverse and longitudinal variations in ice thickness and how these patterns relate to the flow of the ice tongue and, ultimately, to the distribution of meteorites on the surface. Additional work was also carried out to determine if an ice-stratigraphic sequence is exposed on the surface of the ice tongue. The results for three profiles are shown in a figure. The profiles show an overall ice depth of about 400 to 500 m.

50-1888

Geophysical experiments on Ridge B1/B2, Siple Coast.

Bentley, C.R., Burkholder, P.D., Clarke, T.S., Liu, C., Lord, N., *Antarctic journal of the United States,* 1994, 29(5), p.57-59, 9 refs.

Land ice, Geophysical surveys, Glacier flow, Electrical resistivity, Antarctica—Siple Coast

Geophysical field experiments were carried out during the 1993-94 austral summer on the ridge of nearly stationary ice, known as the "Unicorn," that lies between ice streams B1 and B2. The "Unicorn" is bounded by the marginal shear zones of the two ice streams, called the "Heffalump" and the "Dragon," respectively. The base camp, OutB, was situated across the "Dragon" from station UpB, the site of many measurements during several previous field seasons. The overall purpose of this study was to examine the characteristics of the ice and its bed and to search for contrasts with ice stream B2 that might help to understand the nature of the lateral transition zone between regions of slow (approximately 5 m/y) and fast (approximately 500 m/yr) ice movement. The geophysical program comprised seismic, radar, and electrical resistivity experiments spread out over much of the "Unicorn".

50-1889

Temperature measurements in the margin of ice stream B, 1993-1994.

Harrison, W., Echelmeyer, K., *Antarctic journal of the United States,* 1994, 29(5), p.60-61, 4 refs.

Land ice, Temperature measurement, Shear stress, Stream flow, Antarctica—Siple Coast

The low shear stress at the bottom of ice stream B suggested by soft subglacier sediment samples acquired by the California Institute of Technology near UpB Camp and recent theoretical analyses of transverse profiles of velocity across the ice stream indicate that the margins of the ice stream probably play a significant role in its force balance, perhaps exerting more drag on the ice stream than the bed itself. Because the ice stream is wide relative to its thickness (the ratio is roughly 35:1), this situation would require a large shear stress at the margins of the ice stream, large enough that the effects of strain heating there should be detectable by temperature measurements within the ice. The most important unknowns are the rate of convergence of ice into the ice stream (the rate controls the residence time of the ice in the active part of the margins), the stability of the positions of the margins, and the shear stress itself. These ideas are being examined in ice stream B by a program of temperature measurements in the margins and a surveying program to improve knowledge of the rate of convergence of the ice into the ice stream. The work began in the south margin near UpB Camp in 1992-93 and continued at OutB in 1993-94. Preliminary results indicate that the heating rate implies high shear stress, high enough to be important in the force balance of the ice stream as predicted.

50-1890

Progress in ice-stream basal modeling.

Alley, R.B., *Antarctic journal of the United States,* 1994, 29(5), p.61-62, 26 refs.

Land ice, Streams, Ice models, Basal sliding, Subglacial drainage, Antarctica—Siple Coast

A traverse down the flank of ridge BC and onto ice stream B, West Antarctica, shows a fivefold reduction in gravitational driving stress, an order-of-magnitude decrease in basal shear stress, but an increase in ice velocity by two orders of magnitude. Extreme basal lubrication beneath the ice stream is the only physically plausible explanation. Predictive models of the antarctic ice sheet and other past or present ice sheets must address this remarkable behavior. Here, the author summarizes some recent advances leading toward a model of efficient basal lubrication. He points out that fast iceflow is not synonymous with efficient basal lubrication—east antarctic and Greenlandic outlet glaciers and ice streams achieve high velocities largely through internal deformation of the ice owing to great thicknesses and high basal shear stresses.

50-1891

Ice velocities near a relict flow feature on Siple Dome.

Jacobel, R.W., Dorsey, C.W., Harner, A.M., *Antarctic journal of the United States,* 1994, 29(5), p.62-66, 3 refs.

Ice surface, Imaging, Spaceborne photography, Crevasses, LANDSAT, Streams, Flow rate, Antarctica—Siple Coast

Advanced very-high-resolution radiometer (AVHRR) imagery of the western Ross Embayment shows a linear feature crossing the northwest flank of Siple Dome, the ridge separating ice streams C and D. Bindschadler and Vornberger (1990) have tentatively identified this as a possible relict ice stream margin, traversing an area which today is interstream ice. This would indicate a different configuration of these ice streams in the past and has important implications for the behavior of the west antarctic ice sheet. In an effort to gain more information about this relict margin feature, the authors have made enhancements of AVHRR imagery to gain greater spectral resolution. They have also used repeat Landsat thematic mapper (TM) scenes and the methods developed by Bindschadler and Scambos (1991) to determine surface-ice velocities at one location near the relict margin. They are presently engaged in fieldwork to study the relict margin area using surface-based ice-penetrating radar to examine the continuity of internal layers, and geodetic surveying to measure ice velocities and strain rates.

50-1892

Internal layer folding patterns from radar studies of ice streams B and C.

Jacobel, R.W., Grommes, B.J., *Antarctic journal of the United States,* 1994, 29(5), p.66-68, 8 refs.

Land ice, Ice structure, Radar echoes, Ice deformation, Streams, Flow rate, Antarctica—Siple Coast

The authors have continued studies of the folding patterns of internal layers seen in ground-based radar studies of ice streams B and C. The echoes from these layers arise from changes in the dielectric properties of ice due to deposition of debris on the ice surface. Therefore, the internal layers represent isochrones that can be analyzed to gain clues about ice dynamics. Recent work has focused on the three-dimensional nature of the fold structures because the authors have found that there is also considerable deformation in the direction transverse to flow, and this deformation needs to be incorporated into an understanding of ice-stream dynamics. A figure shows two intersecting radar profiles acquired at the downstream B location, one approximately along the flow direction and the other transverse to it. The same prominent fold in the internal layers can be seen in both profiles. This can be the case only if the actual fold structure trends oblique to the flow direction and the profiles depict a projection of the fold on each axis.

50-1893

Preliminary data from western Ross Sea cores: part of an investigation of long-term ice-sheet stability.

Licht, K., Jiang, X., *Antarctic journal of the United States,* 1994, 29(5), p.68-70, 6 refs.

Glacial geology, Marine geology, Ice sheets, Sediments, Ice volume, Antarctica—Ross Sea

Recent studies of the West Antarctic ice sheet and the Ross Ice Shelf have identified variable iceflow rates, unstable bed-ice sheet coupling, and the presence of water-saturated deforming sediments beneath ice stream B. This evidence indicates that the west antarctic ice sheet is likely to be unstable and may have been so during the Late Quaternary. To address the issue of long-term ice-sheet stability, research efforts at INSTAAR are focusing on the extent of west antarctic ice sheet expansion during the last glacial maximum, subglacial sediments associated with ice advance, and the timing of ice-sheet retreat. This article discusses analyses that have been completed on existing cores stored at the Florida State University Antarctic Research Facility and analysis of new cores acquired during a 1994 cruise of the *Nathaniel B. Palmer* to the Ross Sea.

50-1894

Reconstruction of atmospheric carbon dioxide and isotopic carbon-13 dioxide from air occluded in ice cores from Greenland and Antarctica.

Wahlen, M., *Antarctic journal of the United States,* 1994, 29(5), p.71-72, 5 refs.

Ice cores, Bubbles, Atmospheric composition, Paleoclimatology, Antarctica—Vostok Station, Greenland

Measurements of the carbon dioxide (CO_2) mixing ratio and isotopic carbon-13 dioxide ($\delta^{13}CO_2$) in the air extracted from ice cores from Greenland and from Antarctica (Vostok) are reported. The goals are to determine the phasing between temperature and atmospheric CO_2 changes during periods of different climatic conditions and to gain insight into the mechanisms producing the observed CO_2 variations. The Vostok ice core (5G) was examined for CO_2 for the penultimate glacial-to-interglacial transition between 2,000 and 1,840 m depth, corresponding to about 140,000 to 128,000 years ago. A fairly smooth transition in CO_2 from glacial (180-200 ppm) to interglacial (about 290 ppm) values is indicated in a figure.

50-1895

Uptake of methanesulfonate and sulfate in ice.

Whung, P.Y., Saltzman, E.S., Gross, G.W., *Antarctic journal of the United States,* 1994, 29(5), p.73-75, 4 refs.

Ice composition, Atmospheric composition, Air ice water interaction

Methanesulfonate (MSA) is an atmospheric oxidation product of dimethyl sulfide; the latter is produced by phytoplankton in the surface ocean. Because of its biogenic origin, MSA can be used as a biological tracer in studies of atmospheric sulfur chemistry. The ratio of MSA to total non-seasalt sulfur has been used as an indicator for various atmospheric sulfur sources. Due to differences in physicochemical properties of MSA and sulfate, postdepositional processes could alter this fraction. Specifically, the authors address the question of whether there is a difference in the distribution coefficients ($Conc._{ice}/Conc._{water}$) of MSA and of sulfate. They also study the effect of ammonia on the uptake of MSA and sulfate in ice.

50-1896

Dielectric response of ice growth from dilute sulfate solutions.

Gross, G.W., Svec, R.K., Whung, P.Y., *Antarctic journal of the United States,* 1994, 29(5), p.75-76, 2 refs.

Ice composition, Dielectric properties, Electrical resistivity

The present work aims at obtaining baseline data on dielectric response of sulfate in ice columns (=20-25 cm, ⌀=3.8 cm) grown in the laboratory under quasi-equilibrium conditions. Trapping of solute in grain boundaries is minimized by continuous stirring of the melt. For sulfate concentration and electrical measurements, the columns were sliced in approximately 1.5 cm increments. Three dielectric relaxation parameters (principal relaxation time, high-frequency conductivity, and static or direct-current conductivity), measured on 6 ice samples of different sulfate concentrations, are plotted against reciprocal absolute temperature (Arrhenius plots) and shown in figures.

50-1897

Study of grounding-line sedimentation processes at the Mackay Glacier tongue using a remotely operated vehicle: observations on the seafloor epibenthic community.

Dawber, M., Powell, R.D., *Antarctic journal of the United States,* 1994, 29(5), p.77-78, 7 refs.

Glacier beds, Bottom sediment, Marine geology, Marine biology, Glacial deposits, Antarctica—Mackay Glacier Tongue

The condition of grounding lines of polar ice sheets appears to be one of the critical factors governing ice-sheet stability. Sedimentation processes at the grounding line of the Mackay Glacier are being documented using a submersible remotely operated vehicle (ROV). The primary purposes of this study are to determine the physical processes by which terrigenous clastic sediments move from antarctic glaciers into marine environments and to estimate the volume contributed annually at the grounding line. A complement to these goals is an evaluation of epibenthic communities that may aid in the understanding of the physical and chemical characteristics of the environment near the glacier tongue. In the 1993 field season, 8 dives were made with the submersible ROV from three holes in the sea ice, two of which were located in wedge chasms on the southern margin of the glacier tongue and the third at the front of the glacier tongue. The composition of the sediments found on the seafloor beneath the Mackay Glacier Tongue is described.

50-1898

Taylor Ice Dome study 1993-1994: an ice core to bedrock.

Grootes, P.M., Steig, E.J., Stuiver, M., *Antarctic journal of the United States,* 1994, 29(5), p.79-81, 12 refs.

Ice cores, Drill core analysis, Electrical resistivity, Bedrock, Ice density, Antarctica—Taylor Dome

Taylor Dome has been studied over the previous three field seasons to find the best location to extract an ice core to bedrock. During the 1993-94 field season, the authors recovered a 554-m long core to bedrock plus about 6 cm of basal sediment and rock debris at a site about 1.5 km (three ice thicknesses) southwest of the flow divide over a relatively flat local bedrock high. Below 335 m, they encountered brittle ice which led to internal fractures and breaks in the core and, occasionally, to badly broken or shattered core with loss of orientation. In most cases, however, the continuity of the core for orientation and sampling purposes was preserved and core loss was minimal. The oriented core makes it possible to determine the relationship between inclined layers observed in the core and in the ice radar plots. Preliminary observations of the core are described.

50-1899

Glacier geophysics at Taylor Dome: year 4.

Waddington, E.D., Morse, D.L., Clow, G.D., *Antarctic journal of the United States,* 1994, 29(5), p.82-84, 10 refs.

Ice cores, Ice physics, Glaciers, Paleoclimatology, Boreholes, Temperature, Antarctica—Taylor Dome

Taylor Dome, centered west of the Transantarctic Mountains, is a local ice dome that supplies ice to glaciers in the McMurdo Dry Valleys. After 3 years of planning and reconnaissance to select a site, an ice core reaching bedrock at 554 m depth was recovered in Jan. 1994. Geophysical work continued at the site in 1993-94, gathering information needed to interpret the ice-core paleoclimate record accurately and to derive additional climatic data to complement the ice-core records.

50-1900

Preliminary report on the physical and stratigraphic properties of the Taylor Dome ice core.

Fitzpatrick, J.J., *Antarctic journal of the United States.* 1994, 29(5), p.84-86, 8 refs.

Ice cores, Ice physics, Stratigraphy, Flow rate, Antarctica—Taylor Dome

During the 1993-94 austral field season, a 554 m core to bedrock was recovered from Taylor Dome drill site. Physical properties, including density, grain- and bubble-sizes, temperature, and differential ultrasonic *p*-wave velocity, were measured in the field within a few hours of core recovery in a subsurface laboratory near the drill site. The preliminary results of these analyses are presented here.

50-1901

Means of developing a frozen ground enclosure around a shaft to be sunk. [Sposob obrazovaniia ledoporodkogo ograzhdeniia vokrug sooruzhaemoĭ vyrabotki]

Boguslavskiĭ, E.I., Milekhin, G.G., Alibekov, R.G., Alibekova, E.G., *USSR. Komitet po delam izobretenii i otkrytii. Patent,* July 15, 1992, 3p., SOVP-1747695/A1, In Russian.

Shaft sinking, Analysis (mathematics), Frozen ground thermodynamics, Mining, Soil freezing, Frozen rocks

50-1902

Means of distributing waste water into soil in subfreezing temperatures. [Sposob raspredeleniia stochnykh vod na pochvu pri otritsatel'nykh temperaturakh]

Martynov, A.G., *USSR. Komitet po delam izobretenii i otkrytii. Patent,* July 23, 1992, 3p., SOVP-1748743/A1, In Russian.

Waste disposal, Cold weather operation, Sewage disposal

50-1903

Device for creating a spring ice jam. [Ustroĭstvo dlia sozdaniia vesennego zatora l'da]

Ilarov, N.A., Syromiatnikov, S.V., *USSR. Komitet po delam izobretenii i otkrytii. Patent,* July 23, 1992, 3p., SOVP-1749344/A1, In Russian.

Ice jams, River ice, Ice formation, Equipment, Design

50-1904

Gravitational platform and the means for its assembly. [Gravitatsionnaia platforma i sposob ee montazha]

Ionin, V.S., Vil'nit, I.V., Medved', I.S., *USSR. Komitet po delam izobretenii i otkrytii. Patent,* July 23, 1992, 4p., SOVP-1749373/A1, In Russian.

Mining, Equipment, Ice cover, Hydraulic structures, Design

50-1905

Thermopiles. [Termosvaia]

Garanin, L.I., *USSR. Komitet po delam izobretenii i otkrytii. Patent,* July 23, 1992, 3p., SOVP-1749386/A1, In Russian.

Thermopiles, Pile structures, Foundations, Permafrost beneath structures

50-1906

Warning device for precipitation. [Signalizator osadkov]

Romanov, E.V., Ushakova, T.I., *USSR. Komitet po delam izobretenii i otkrytii. Patent,* July 23, 1992, 4p., SOVP-1749878/A1, In Russian.

Warning systems, Precipitation (meteorology), Snowfall, Design, Equipment

50-1907

Electrical wire. [Elektricheskiĭ provod]

Belash, I.P., Gonchar, M.I., *USSR. Komitet po delam izobretenii i otkrytii. Patent,* July 23, 1992, 3p., SOVP-1749914/A1, In Russian.

Electric equipment, Glaze, Ice loads, Design

50-1908

Working tool for snow clearing. [Rabochiĭ organ snegoochistitelia]

Gavrilov, IU.M., Kurilov, E.V., Kraĭnov, A.A., Artemov, V.A., *USSR. Komitet po delam izobretenii i otkrytii. Patent,* July 30, 1992, 3p., SOVP-1751254/A1, In Russian.

Snow removal equipment, Machinery, Design

50-1909

Device for loosening snow. [Ustroĭstvo dlia rykhleniia snega]

Fedorov, V.D., Korchagin, A.I., *USSR. Komitet po delam izobretenii i otkrytii. Patent,* July 30, 1992, 4p., SOVP-1751256/A1, In Russian.

Snow removal equipment, Railroad tracks, Design

50-1910

Thermal machine for clearing airport pavements of snow and ice. [Teplovaia mashina dlia ochistki aerodromnykh pokrytiĭ ot snezhno-ledianykh obrazovaniĭ]

Mogutnov, A.A., *USSR. Komitet po delam izobretenii i otkrytii. Patent,* Aug. 15, 1992, 3p., SOVP-1754838/A1, In Russian.

Airports, Pavements, Ice removal, Snow removal equipment, Vehicles, Design

50-1911

Ice dam. [Ledianaia plotina]

Vasil'ev, P.N., Ilarov, N.A., Faĭko, L.I., Shteĭn, IU.V., *USSR. Komitet po delam izobretenii i otkrytii. Patent,* Aug. 15, 1992, 3p., SOVP-1754841/A1, In Russian.

Ice dams, Rivers, River ice, Irrigation

50-1912

Means of raising an ice structure on the shelf of ice-covered seas. [Sposob vozvedeniia ledianogo sooruzheniia na shel'fe zamerzaiushchikh moreĭ]

Savel'ev, B.A., Razumnyĭ, V.V., Sirenko, V.T., Kutvitskaia, N.B., Rekk, B.A., *USSR. Komitet po delam izobretenii i otkrytii. Patent,* Aug. 15, 1992, 3p., SOVP-1754845/A1, In Russian.

Ice (construction material), Pipes (tubes), Hydraulic structures

50-1913

Raw material mixture for constructing roadbeds. [Syr'evaia smes' dlia stroitel'stva dorozhnogo osnovaniia]

Il'inskiĭ, B.P., Ivanchin, N.N., Letskikh, V.A., *USSR. Komitet po delam izobretenii i otkrytii. Patent,* Aug. 30, 1992, 6p., SOVP-1758136/A1, In Russian.

Roadbeds, Frost resistance, Admixtures

50-1914

Embankment. [Nasyp']

Pal'kin, IU.S., *USSR. Komitet po delam izobretenii i otkrytii. Patent,* July 30, 1992, 3p., SOVP-1751265/A1, In Russian.

Embankments, Permafrost bases

50-1915

Working element of a tool with lifting-percussion action. [Rabochiĭ organ rykhlitelia pod"emno-udarnogo deĭstviia]

Glebov, V.D., Tarkhov, A.I., Ivanova, V.M., Vetlitsyn, A.M., *USSR. Komitet po delam izobretenii i otkrytii. Patent,* July 30, 1992, 4p., SOVP-1751276/A1, In Russian.

Equipment, Percussion drilling, Machinery, Frozen ground, Design

50-1916

Device for protecting a pipeline from freezing. [Ustroĭstvo dlia zashchity truboprovoda ot zamerzaniia]

D'iachenko, K.S., Protasov, S.I., Protasov, M.I., Przhezhetskiĭ, V.V., *USSR. Komitet po delam izobretenii i otkrytii. Patent,* July 30, 1992, 3p., SOVP=1751280/A1, In Russian.

Pipelines, Countermeasures, Equipment, Ice formation, Ice prevention, Design

50-1917

Rubber stock for rubber coverings. [Rezinovaia smes' dlia pokrovnykh rezin]

Liubashevskiĭ, M.I., Sizikov, N.N., *USSR. Komitet po delam izobretenii i otkrytii. Patent,* Aug. 7, 1992, 4p., SOVP-1752744/A1, In Russian.

Rubber, Rubber ice friction

50-1918

Means of testing porous materials for frost resistance. [Sposob ispytaniia poristykh materialov na morozostoĭkost']

Shapranov, V.M., *USSR. Komitet po delam izobretenii i otkrytii. Patent,* Aug. 7, 1992, 2p., SOVP-1753384/A1, In Russian.

Frost resistance, Porosity, Cold weather construction, Freeze thaw cycles, Concrete freezing

50-1919

Device for applying an insulation cover on overhead power lines. [Ustroĭstvo dlia naneseniia pokrytiia na provoda vozdushnykh liniĭ elektroperedachi]

Gonchar, M.I., Lavrenov, V.S., *USSR. Komitet po delam izobretenii i otkrytii. Patent,* Aug. 7, 1992, 6p., SOVP-1753527/A1, In Russian. 2 refs.

Power lines, Electrical insulation, Equipment, Machinery, Vehicles

50-1920

Composition for an anti-icing coating. [Kompozitsiia dlia protivoobledenitel'nogo pokrytiia]

Bochmanov, A.D., Bol'shak, IU.V., Deĭnega, IU.F., Vlasiuk, N.V., Pilipchuk, O.A., *USSR. Komitet po delam izobretenii i otkrytii. Patent,* Feb. 15, 1992, 3p., SOVP-1712388/A1, In Russian. 1 ref.

Countermeasures, Covering, Icing, Ice adhesion, Polymers, Resins, Ship icing, Aircraft icing

50-1921

Device for measuring pressure. [Ustroĭstvo dlia izmereniia davleniia]

Zinov'ev, V.A., Kuzekmaev, A.V., Vorozhbitov, A.I., *USSR. Komitet po delam izobretenii i otkrytii. Patent,* June 30, 1992, 6p., SOVP-1744533/A1, In Russian. 2 refs.

Measuring instruments, Design, Remote sensing, Pressure, Accuracy, Design

50-1922

Means of determining the anti-erosion stability of soil. [Sposob opredeleniia protivoerozionnoĭ stoĭkosti pochvy]

Vladimirov, V.Kh., *USSR. Komitet po delam izobretenii i otkrytii. Patent,* Feb. 15, 1992, 3p., SOVP-1712867/A1, In Russian. 1 ref.

Soil erosion, Soil stabilization, Countermeasures, Freeze thaw cycles, Snow melting

50-1923

Device for protecting a bridge from naleds. [Ustroĭstvo dlia zashchity mosta ot naledeĭ]

Dement'ev, V.A., Dement'eva, O.V., *USSR. Komitet po delam izobretenii i otkrytii. Patent,* June 15, 1992, 4p., SOVP-1740523/A1, In Russian. 1 ref.

Bridges, Naleds, Countermeasures, Dams, Levees, Design

50-1924

Ice platform. [Ledianaia platforma]

Gabibov, F.G., Turkiia, A.V., *USSR. Komitet po delam izobretenii i otkrytii. Patent,* June 15, 1992, 3p., SOVP-1740546/A1, In Russian.

Hydraulic structures, Offshore structures, Ice (construction material), Design

50-1925

Railroad tracks on ice-rich permafrost. [Zheleznodorozhnyĭ put' na sil'nol'distykh vechnomerzlykh gruntakh]

Kondrat'ev, V.G., Korolev, A.A., Karlinskiĭ, M.I., Pozin, V.A., Rozanov, A.S., *USSR. Komitet po delam izobretenii i otkrytii. Patent,* June 15, 1992, 4p., SOVP-1740555/A1, In Russian. 1 ref.

Railroad tracks, Permafrost beneath structures, Cold weather construction, Roofs, Countermeasures, Design

50-1926

Means of snow melioration. [Sposob snezhnoĭ melioratsii]

Terpilovskiĭ, E.IU., Terpilovskiĭ, A.IU., Astaf'ev, V.L., *USSR. Komitet po delam izobretenii i otkrytii. Patent,* June 23, 1992, 2p., SOVP-1741625/A1, In Russian. 1 ref.

Snow accumulation, Embankments, Agriculture

50-1927

Device for snow retention. [Ustroĭstvo dlia snegozaderzhaniia]

Khuzin, V.Kh., *USSR. Komitet po delam izobretenii i otkrytii. Patent,* June 30, 1992, 4p., SOVP-1743388/A2, In Russian.

Snow compression, Snow retention, Agriculture, Machinery, Equipment, Snow cover, Design

50-1928

Snowplow. [Otval snegoochistitelia]

Ermilov, A.B., Rubin, O.L., *USSR. Komitet po delam izobretenii i otkrytii. Patent,* June 30, 1992, 4p., SOVP-1744176/A1, In Russian. 2 refs.

Snow removal equipment, Design

50-1929

Device for preventing the icing of supporting structures. [Ustroĭstvo dlia predotvrashcheniia obledeneniia opornoĭ konstruktsii]

Barkhanov, V.N., Nartov, S.A., Ershov, A.I., *USSR. Komitet po delam izobretenii i otkrytii. Patent,* June 30, 1992, 3p., SOVP-1744191/A1, In Russian.

Icing, Countermeasures, Hydraulic structures, Drilling, Shafts (excavations), Design

50-1930

Device for measuring the thickness of ice cover. [Ustroĭstvo dlia izmereniia tolshchiny ledianogo pokrova]

Ilarov, N.A., Shteĭn, IU.V., Krasnov, V.N., *USSR. Komitet po delam izobretenii i otkrytii. Patent,* June 30, 1992, 3p., SOVP-1744417/A1, In Russian. 2 refs.

Measuring instruments, Ice cover thickness, Design, Accuracy

50-1931

Device for determining ice adhesion. [Ustroĭstvo dlia opredeleniia adgezii l'da]

Gnatiuk, V.V., Genzelev, B.M., Malyshev, V.P., Radchenko, E.A., *USSR. Komitet po delam izobretenii i otkrytii. Patent,* June 30, 1992, 3p., SOVP-1744602/A1, In Russian. 2 refs.

Ice adhesion, Equipment, Ice detection, Design

50-1932

Rotary snow remover. [Snegoochistitel' rotornyĭ]

Zalko, A.I., Polivanov, IU.P., Simonov, V.S., *USSR. Komitet po delam izobretenii i otkrytii. Patent,* Aug. 7, 1992, 5p., SOVP-1752590/A1, In Russian. 1 ref.

Snow removal equipment, Design, Vehicles

50-1933

Device for shaping ice roads. [Ustroĭstvo dlia formirovaniia ledianykh dorog]

Khan, V.B., Khan, K.V., Khan, O.V., Panamareva, T.G., Raĭs, V.R., *USSR. Komitet po delam izobretenii i otkrytii. Patent,* Aug. 7, 1992, 4p., SOVP-1752845/A1, In Russian. 2 refs.

Ice roads, Construction, Ice (construction material), Vehicles, Construction equipment

50-1934

Device for the removal of snow and ice from road pavements. [Ustroĭstvo dlia uborki snezhnoledianykh obrazovaniĭ s dorozhnykh pokrytiĭ]

Veteris, V.I., Sakalauskas, L.V., Sibitaĭte, D.I., Palenis, B.M., *USSR. Komitet po delam izobretenii i otkrytii. Patent,* Aug. 7, 1992, 5p., SOVP-1752846/A1, In Russian. 2 refs.

Snow removal equipment, Pavements, Vehicles, Winter maintenance, Road maintenance, Snow removal, Ice removal, Design

50-1935

Machine for clearing railroad tracks. [Mashina dlia uborki zheleznodorozhnykh puteĭ]

Mokin, N.V., Filatov, A.P., Glotov, V.A., *USSR. Komitet po delam izobretenii i otkrytii. Patent,* Aug. 7, 1992, 4p., SOVP-1752847/A1, In Russian. 1 ref.

Snow removal equipment, Snow removal, Railroad tracks, Design

50-1936

Mudflow-retaining structure. [Selezashchitnoe sooruzhenie]

Baĭhatov, Zh.B., Kuziutin, A.D., *USSR. Komitet po delam izobretenii i otkrytii. Patent,* Aug. 7, 1992, 4p., SOVP-1752853/A1, In Russian. 1 ref.

Mudflows, Countermeasures, Avalanches, Avalanche protection, Hydraulic structures

50-1937

Hydrotechnical structure for fast ice. [Ledovopripaĭnoe gidrotekhnicheskoe sooruzhenie]

Silin, A.V., Zlatoverkhovnikov, L.F., Fedorov, I.P., *USSR. Komitet po delam izobretenii i otkrytii. Patent,* Aug. 7, 1992, 3p., SOVP-1752867/A1, In Russian. 1 ref.

Fast ice, Hydraulic structures, Countermeasures, Design

50-1938

Machine for breaking up hard materials. [Mashina dlia razrusheniia prochnykh materialov]

Liublinskiĭ, G.B., Shchekin, IU.G., Kamburov, V.A., Preobrazhenskiĭ, K.I., *USSR. Komitet po delam izobretenii i otkrytii. Patent,* Aug. 7, 1992, 5p., SOVP-1752886/A1, In Russian. 2 refs.

Construction equipment, Machinery, Design, Strength

50-1939

Polymer composition for plastic material. [Polimernaia kompozitsiia dlia plenochnogo materiala]

Lerner, B.Sh., Shakhsva, G.I., *USSR. Komitet po delam izobretenii i otkrytii. Patent,* May 23, 1992, 4p., SOVP-1735325/A1, In Russian. 2 refs.

Plastics, Films, Polymers, Pipeline insulation, Roads, Cold weather performance

50-1940

Drive for a brake system for rail transportation. [Privod dlia tormoznoĭ sistemy rel'sovogo transportnogo sredtsva]

Rudenko, I.M., Andreev, A.M., *USSR. Komitet po delam izobretenii i otkrytii. Patent,* July 7, 1992, 4p., SOVP-1745583/A1, In Russian. 1 ref.

Design, Railroads, Brakes (motion arresters)

50-1941

Device for maintaining ice-free areas around a floating dredging pump. [Ustroĭstvo dlia podderzhaniia maĭny vokrug plavuchego zemlesosnogo snariada]

Barskiĭ, B.L., Ushakov, E.F., Barskaia, G.B., *USSR. Komitet po delam izobretenii i otkrytii. Patent,* July 7, 1992, 5p., SOVP-1745834/A2, In Russian. 1 ref.

Polynyas, Countermeasures, Hydraulic structures, Equipment, Excavation, Cold weather operation, Design, Floating structures

50-1942

Device for loosening frozen ground before excavation. [Ustroĭstvo dlia rykhleniia merzlogo grunta pered ekskavatsieĭ]

Maschev, V.A., Maschev, D.A., Medvedeva, E.V., *USSR. Komitet po delam izobretenii i otkrytii. Patent,* July 7, 1992, 4p., SOVP-1745840/A1, In Russian. 2 refs.

Design, Cold weather construction, Excavation, Frozen ground strength, Machinery

50-1943

Method for underground gasification of coal. [Sposob podzemnoĭ gazifikatsii uglia]

Shtele, V.I., *USSR. Komitet po delam izobretenii i otkrytii. Patent,* July 7, 1992, 2p., SOVP-1745907/A1, In Russian. 2 refs.

Natural gas, Gas production, Coal, Mining, Permafrost

50-1944

Method of excavating in frozen ground. [Sposob razrabotki merzlogo grunta]

Mukhametdinov, Kh.K., Sagidullin, G.G., *USSR. Komitet po delam izobretenii i otkrytii. Patent,* July 7, 1992, 3p., SOVP-1745923/A1, In Russian. 1 ref.

Pipe laying, Excavation, Ground thawing, Boreholes, Frozen ground, Heating

50-1945

Device for boring holes in ice. [Ustroĭstvo dlia bureniia lunok vo l'du]

Solov'eva, IU.IA., *USSR. Komitet po delam izobretenii i otkrytii. Patent,* July 15, 1992, 4p., SOVP-1746975/A1, In Russian. 4 refs.

Ice cutting, Ice drills, Ice cover, Design

50-1946

Raw mixture for preparing concrete. [Syr'evaia smes' dlia izgotovleniia gazobetona]

Nikonova, N.S., et al, *USSR. Komitet po delam izobretenii i otkrytii. Patent,* July 15, 1992, 2p., SOVP-1747427/A1, In Russian. 2 refs.

Concretes, Concrete freezing, Frost resistance, Concrete admixtures

50-1947

Method of preserving ice. [Sposob khraneniia l'da]

Fel'dman, B.IA., *USSR. Komitet po delam izobretenii i otkrytii. Patent,* July 15, 1992, 2p., SOVP-1747822/A1, In Russian. 2 refs.

Preserving, Ice cover, Floating ice, Countermeasures, Insulation

50-1948

Mobile offshore platform and a method for its assembly and dismantling. [Peredvizhenaia morskaia platforma i sposob ee montazha i demontazha]

Ionin, V.S., *USSR. Komitet po delam izobretenii i otkrytii. Patent,* July 23, 1992, 4p., SOVP-1749374/A1, In Russian. 1 ref.

Offshore structures, Floating structures, Ice solid interface, Design

50-1949

Ice breaking device for an offshore platform. [L'dorazrushaiushchee ustroĭstvo dlia morskoĭ platformy]

Mishin, V.N., Ryzhakov, N.N., Chipiga, I.A., *USSR. Komitet po delam izobretenii i otkrytii. Patent,* July 23, 1992, 3p., SOVP-1749375/A1, In Russian. 1 ref.

Offshore structures, Floating structures, Ice breaking, Equipment, Design

50-1950

Device for preventing water from freezing. [Ustroĭstvo dlia predokhraneniia vody ot zamerzaniia]

Turutin, B.F., Liutov, A.V., *USSR. Komitet po delam izobretenii i otkrytii. Patent,* July 23, 1992, 3p., SOVP-1749690/A1, In Russian. 2 refs.

Design, Ice formation, Countermeasures, Heat transfer, Equipment, Cold weather operation

50-1951

Calculation of free energy for molecular crystals by thermodynamic integration.

Báez, L.A., Clancy, P., *Molecular physics,* Oct. 20, 1995, 86(3), p.385-396, 17 refs.

Ice physics, Molecular energy levels, Thermodynamic properties, Molecular structure, Latticed structures, Ice crystal structure, Defects, Stability, Ice models, Simulation, Analysis (mathematics)

50-1952

Trace elements in the Weddell Sea water and sediments in the continental shelf area.

Niemistö, L., Perttilä, M., *Chemosphere,* Oct. 1995, 31(7), p.3643-3650, 17 refs.

Oceanography, Bottom sediment, Sedimentation, Sampling, Minerals, Chemical analysis, Isotope analysis, Antarctica—Weddell Sea

During the Finnish antarctic cruise FINNARP89, a relatively rapid sedimentation area was found at the edge of the continental shelf in the vicinity of the ice edge. The average rate of sedimentation in the topmost sediment surface, measured by means of ^{210}Pb technique, was 0.2 mm/y, an order of magnitude higher than in the open Weddell Sea area. (Auth.)

50-1953

Effect of freezing of water samples on viable counts of environmental mycobacteria.

Iivanainen, E., Martikainen, P.J., Katila, M.L., *Letters in applied microbiology,* Oct. 1995, 21(4), p.257-260, 20 refs.

Microbiology, Limnology, Bacteria, Sampling, Statistical analysis, Accuracy, Viability, Frozen liquids, Freeze thaw cycles, Cold storage, Survival

50-1954

Tests clear snow, path for use of liquid anti-icing in northwest.

Deep, D., Parker, D., *Roads & bridges,* Aug. 1994, 33(8), p.50-52.

Road icing, Winter maintenance, Bridges, Ice control, Snow melting, Chemical ice prevention, Solutions, Environmental protection, Cold weather tests, Cold weather performance, Cost analysis

50-1955

Potential food applications of high-pressure effects on ice-water transitions.

Kalichevsky, M.T., Knorr, D., Lillford, P.J., *Trends in food science & technology,* Aug. 1995, 6(8), p.253-259, 39 refs.

Ice physics, Ice water interface, Phase transformations, Atmospheric pressure, High pressure tests, Freezing points, Melting points, Thermodynamics, Temperature effects, Preserving, Solids

50-1956

Bacterial ice nucleation and its potential applications in the food industry.

Li, J.K., Lee, T.C., *Trends in food science & technology,* Aug. 1995, 6(8), p.259-265, 38 refs.

Cryobiology, Bacteria, Ice formation, Artificial nucleation, Heterogeneous nucleation, Nucleation rate, Solids, Freeze drying, Preserving

50-1957

Reconstruction of the ice winter severity since 1701 in the western Baltic.

Koslowski, G., Glaser, R., *Climatic change,* Sep. 1995, 31(1), p.79-98, 35 refs.

Climatology, Climatic changes, Sea ice distribution, Ice conditions, Winter, Ice volume, Air ice water interaction, Periodic variations, Statistical analysis, Correlation, Classifications, Baltic Sea

50-1958

Estimation of snowmelt volume using air temperature and wind speed.

Hasebe, M., Kumekawa, T., *Environment international,* 1995, 21(5), p.497-500, 9 refs.

Snow hydrology, Snowmelt, Snow water content, Snow air interface, Heat flux, Air temperature, Wind velocity, Correlation, Runoff forecasting, Mathematical models

50-1959

Study on snowmelt runoff prediction using weekly weather forecast.

Hatta, S., Nishimura, T., Saga, H., Fujita, M., *Environment international,* 1995, 21(5), p.501-507, 8 refs.

Snow hydrology, Snowmelt, River basins, Runoff forecasting, Weather forecasting, Meteorological data, Air temperature, Insolation, Correlation, Mathematical models

50-1960

Isolation and characterization of a novel ice-nucleating bacterium, *Pseudomonas* sp. KUIN-4, which has stable activity in acidic solution.

Kawahara, H., Tanaka, Y., Obata, H., *Bioscience, biotechnology, and biochemistry,* Aug. 1995, 59(8), p.1528-1532, 26 refs.

Cryobiology, Bacteria, Microbiology, Ice nuclei, Freezing nuclei, Artificial nucleation, Chemical properties, Classifications, Temperature effects, Density (mass/volume), Stability

50-1961

Predicting brick frost resistance, II.

Robinson, G.C., Butler, D., Smalley, A., *American Ceramic Society. Bulletin,* Oct. 1995, 74(10), p.64-69.

Bricks, Ceramics, Frost resistance, Forecasting, Mechanical tests, Saturation, Capillarity, Permeability, Porosity, Correlation

50-1962

Inflight icing: certification vs. reality.

Steenblik, J.W., *Air line pilot,* Aug. 1995, 64(7), p.13-17,54.

Aircraft icing, Ice control, Ice removal, Standards, Supercooled clouds, Cloud droplets, Safety, Design criteria

50-1963

Earth-gridded SSM/I data set for cryospheric studies and global change monitoring.

Armstrong, R.L., Brodzik, M.J., *Advances in space research,* Nov. 1995, 16(10), A1 Symposium of COSPAR Scientific Commission A, Hamburg, Germany, July 11-21, 1994. Proceedings. Satellite monitoring of the earth's surface and atmosphere, p.(10)155-(10)163, 31 refs.

Snow surveys, Snow depth, Snow cover distribution, Spaceborne photography, Radiometry, Accuracy, Global change, Data processing

50-1964

Electrodynamics of the upper atmosphere and radio aurora in the northern polar cap.

Kustov, A.V., et al, *Geomagnetism and aeronomy,* Aug. 1994, 34(2), p.157-165, Translated from Geomagnetizm i aeronomiia. 25 refs.

Geomagnetism, Polar atmospheres, Atmospheric electricity, Radar echoes, Electric fields, Orientation, Periodic variations, Canada—Northwest Territories—Cambridge Bay

50-1965

Not yodelling but drowning.

Edwards, R., *New scientist,* Nov. 11, 1995, 148(2003), p.5.

Alpine glaciation, Global warming, Glacier melting, Flooding, Countermeasures, Switzerland—Alps

50-1966

Global warming cuts no ice in Greenland.

Gribbin, J., *New scientist,* Nov. 11, 1995, 148(2003), p.18.

Ice sheets, Climatology, Ice cover thickness, Aerial surveys, Global warming, Sea level, Greenland

50-1967

Three-dimensional transient heat transfer from a buried pipe: solidification of a stationary fluid.

Negiz, A., Hastaoglu, M.A., Heidemann, R.A., *Numerical heat transfer A,* Aug. 1995, 28(2), p.175-193, 30 refs.

Underground pipelines, Water pipelines, Fluid dynamics, Solidification, Freezing, Heat transfer, Isotherms, Ice solid interface, Mathematical models

50-1968

Blasting surface waste with ice.

Ashley, S., *Mechanical engineering,* Aug. 1995, 117(8), p.28.

Ice blasting, Ice physics, Abrasion, Ice solid interface

50-1969

Aqueous-phase photoproduction of hydrogen peroxide in authentic cloud waters: wavelength dependence, and the effects of filtration and freeze-thaw cycles.

Arakaki, T., Anastasio, C., Shu, P.G., Faust, B.C., *Atmospheric environment,* July 1995, 29(14), p.1697-1703, 18 refs.

Cloud physics, Chemical properties, Cloud droplets, Freeze thaw cycles, Freeze thaw tests, Photochemical reactions, Ultraviolet radiation, Sampling, Spectra

50-1970

Development of a vehicle underfloor snow-melting robot.

Imai, T., Goto, K., Yamada, O., *Japanese railway engineering,* 1995, Vol.132-133, p.18-21.

Railroad equipment, Railroad cars, Snow removal equipment, Hydraulic jets, Snow melting, Mechanical tests, Performance, Design

50-1971

Mercury and polychlorinated biphenyls in suspended particulate matter from the European arctic seas.

Joiris, C.R., Laroussi Moatemri, N., Holsbeek, L., *Environmental contamination and toxicology,* Dec. 1995, 55(6), p.893-900, 20 refs.

Oceanographic surveys, Water pollution, Sampling, Suspended sediments, Impurities, Distribution, Chemical analysis, Correlation, Greenland Sea, Barents Sea

50-1972

UV-B-tolerance of alpine and arctic *Daphnia*.

Zellmer, I.D., *Hydrobiologia,* July 7, 1995, 307(1-3), International Symposium on Cladocera, 3rd, Bergen, Norway, Aug. 9-16, 1993. Proceedings, p.153-159, 12 refs.

Limnology, Ecosystems, Sampling, Plankton, Biomass, Solar radiation, Ultraviolet radiation, Radiation absorption, Survival, Environmental tests, Light effects

50-1973

No ice on board.

Johnson, J.P., Sand, W.R., *Air line pilot,* Jan. 1995, 64(1), p.34-37.

Aircraft icing, Ground ice, Snow removal, Ice removal, Chemical ice prevention, Solutions, Cold weather performance

50-1974

Universal frost susceptibility test apparatus.

Chamberlain, E.J., MP 3725, Transportation Research Board Annual Meeting, 1986, 35p., 1 ref.

Soil tests, Mechanical tests, Pavement bases, Frozen ground mechanics, Test equipment, Measuring instruments, Frost penetration, Frost heave, Thaw weakening, Freeze thaw tests, Loading, Design, Performance

A laboratory test apparatus is described that allows the determination of the frost heave and thaw weakening characteristics of granular soil for specific site conditions. This apparatus provides for freezing, thawing and repeated load triaxial testing in a single device. Actual site condition of temperature and pore water and soil stress can be simulated. The freezing test is fully automated, with programed temperature control and automated data acquisition capabilities. Each data scan provides an output showing the temperature profile, frost heave, frost depths, water elevation, and other test parameters in appropriate engineering units. The data is also stored on cassette tape and can be transferred to a plotter or mainframe computer for further analysis.

50-1975

Grain-scale mechanisms influencing the elution of ions from snow.

Cragin, J.H., Hewitt, A.D., Colbeck, S.C., MP 3726, *Atmospheric environment,* 1996, 30(1), p.119-127, 20 refs.

Snow hydrology, Snow physics, Snowmelt, Ion diffusion, Ion density (concentration), Metamorphism (snow), Ice water interface, Grain size, Snow crystal structure, Solubility, Snow impurities, Simulation

Columns containing synthetic, naturally- or laboratory-aged snow grains were washed with deionized distilled water and with a simulated precipitation solution to investigate both chemical fractionation and preferential ion elution. The resulting elution order and concentrations of Cl^-, NO_3^- and SO_4^{2-} were not influenced by chromatographic effects, indicating that snow grains do not possess selective affinity for inorganic anions. Fractionation and preferential chemical elution were strongly influenced by ion exclusion and rearrangement processes occurring during dry snow metamorphism, independent of melt-freeze cycles.

50-1976

Moisture movement and freezing pressures.

Hoekstra, P., MP 3727, Soil Science Society of America. Annual meeting. New Orleans, LA, 1968. Symposium on freezing and thawing phenomena in soils, 1968, 14p. + appends., 11 refs.

Frozen ground thermodynamics, Soil freezing, Soil water migration, Soil pressure, Phase transformations, Moisture transfer, Ice lenses, Freezing front, Mechanical tests, Ice water interface, Porosity, Ice temperature

Pressures develop when cylindrical columns of saturated soils are frozen unidirectionally under conditions of constant volume with an open water supply at the warm side. The value and behavior of these pressures depend on soil type. If moisture migration can take place in the frozen soil and ice lenses grow behind the freezing front, the value of the pressure depends on the temperature at the ice lens. This process occurs in clayey soils, and the pressure is theoretically limited by the phase transition ice I-water. Values of 100 atmospheres have been measured experimentally. In soils where moisture migration in the frozen soil does not occur and ice lenses form at the freezing front, the pressure reaches a constant value, which may vary between 0.2 atmosphere for a sand soil and 3 atmosphere for a silt soil. Thermodynamic models proposed to explain these phenomena are discussed.

50-1977

Evaluation of clean solid phases for extraction of nitroaromatics and nitramines from water.

Jenkins, T.F., Thorne, P.G., Myers, K.F., McCormick, E.F., Parker, D.E., Escalon, B.L., SR 95-22, *U.S. Army Cold Regions Research and Engineering Laboratory. Special report,* Sep. 1995, 15p., ADA-301 300, 22 refs.

Soil pollution, Water pollution, Explosives, Sediments, Ground water, Leaching, Soil tests, Sampling, Chemical analysis, Environmental tests, Solid phases, Filters, Impurities

Salting-out solvent extraction (SOE) was compared with cartridge and membrane solid-phase extraction (SPE) for preconcentration of nitroaromatics, nitramines, and aminonitroaromatics prior to determination by reversed-phase high-performance liquid chromatography. The solid phases used were manufacturer-cleaned materials: Porapak RDX for the cartridge method and Empore SDB-RPS for the membrane method. Thirty-three groundwater samples from the Naval Surface Warfare Center, Crane, IN, were analyzed using the direct analysis protocol specified in SW846 Method 8330, and the results were compared with analyses conducted after preconcentration using SOE with acetonitrile, cartridge-based SPE, and membrane-based SPE. For high-concentration samples, analytical results from the three preconcentration techniques were compared with results from the direct analysis protocol; good recovery of all target analytes was achieved by all three preconcentration methods. For low-concentration samples, results from the two SPE methods were correlated with results from the SOE method; very similar data was obtained by the SOE and SPE methods, even at concentrations well below 1 µg/L. The large chromatographic interferences observed for the SPE methods in an earlier study using less clean materials were largely absent here. A small interference was observed for both SPE methods at the retention time of RDX on the primary analysis column that translated to concentrations ranging from 0.2 to 0.6 µg/L RDX. Detection limits for RDX should be raised to 0.6 µg/L if the SPE methods are used for preconcentration due to this potential interference. The authors recommend that solid-phase extraction be included as an option in SW846 Method 8330 as well as SOE.

50-1978

Investigation and repair of a terra cotta dome in a cold climate.

Ogle, R., Dennis, B., O'Connor, J., Conference on Thermal Performance of Exterior Envelopes of Buildings VI, Clearwater Beach, FL, Dec. 4-8, 1995. Proceedings, Atlanta, American Society of Heating, Refrigerating and Air-conditioning Engineers, Inc., 1995, p.47-54, 5 refs.

Buildings, Roofs, Ceramics, Structural analysis, Dislocations (materials), Cold weather performance, Leakage, Degradation, Frost protection, Vapor diffusion, Mortars, Sealing

50-1979

Comparison of two techniques for R-value calculation, using winter in-situ data.

Flanders, S.N., Desjariais, A.O., Kunz, T.J., MP 3728, Conference on Thermal Performance of Exterior Envelopes of Buildings VI, Clearwater Beach, FL, Dec. 4-8, 1995. Proceedings, Atlanta, American Society of Heating, Refrigerating and Air-conditioning Engineers, Inc., 1995, p.151-161, 11 refs.

Buildings, Thermal insulation, Thermal analysis, Cold weather performance, Heat flux, Indexes (ratios), Temperature variations, Temperature measurement, Analysis (mathematics), Accuracy, Standards

This study employed winter *in-situ* temperature and heat flux data from a building in North Dakota and two buildings in upstate New York. The authors obtained the temperature and heat flux data according to ASTM Standard Practice C 1046-91. A proposed revision of ASTM Standard Practice C 1155 includes two calculational techniques, summation, and sum of least squares. These techniques were applied to the data obtained and the results compared. The comparison reported in this study was of the estimate of the R-value obtained, the speed at which a stable value was obtained, and an assessment of the conditions that provided the most reliable results from each calculation.

50-1980

Laboratory testing of air retarders in metal building panels.

Flanders, S.N., Bracken, M.S., MP 3729, Conference on Thermal Performance of Exterior Envelopes of Buildings VI, Clearwater Beach, FL, Dec. 4-8, 1995. Proceedings, Atlanta, American Society of Heating, Refrigerating and Air-conditioning Engineers, Inc., 1995, p.119-123, 6 refs.

Buildings, Prefabrication, Panels, Steel structures, Air leakage, Sealing, Wind factors, Air flow, Flow control, Design

The authors tested a variety of air retarder configurations for pre-engineered metal buildings. Test panels were devised to simulate a variety of configurations. The panels were tested in an ASTM E 283 apparatus that establishes a difference in air pressure across the test specimen and measures the resulting airflow through the specimen. The specimens were evaluated for their ability to impede airflow due to air pressure differences.

50-1981

Late Cenozoic geology and environmental evolution of the Qaidam Basin in Qinghai. [Qinghai Chaidamu pendi wan xinshengdai dizhi huanjing yanhua], Beijing, Kexue chubanshe (Science Press), 1986, 156p., In Chinese. Refs. passim. Edited by the Qinghai Institute of Salt Lakes of the Chinese Academy of Sciences (Zhongguo kexueyuan Qinghai yanhu yanjiusuo). For individual papers see 50-1982 through 50-1994.

DLC QE690.C493 1986 Orien China

Paleoclimatology, Stratigraphy, Salt lakes, Lacustrine deposits, Quaternary deposits, Saline soils, Soil surveys, Geological surveys, Exploration, Geochemistry, China—Qaidam Basin

50-1982

Paleogeography of Cenozoic lithofacies and their evolution in the Qaidam Basin. [Chaidamu pendi xinshengdai yanxiang gudili ji qi yanhua]

Yang, Z.L., Qinghai Chaidamu pendi wan xinshengdai dizhi huanjing yanhua (Late Cenozoic geology and environmental evolution of the Qaidam Basin in Qinghai), Beijing, Kexue chubanshe (Science Press), 1986, p.1-18, In Chinese.

Geological surveys, Geologic structures, Quaternary deposits, Stratigraphy, Lithology, Exploration, Geochronology, Paleoclimatology, China—Qaidam Basin

50-1983

Changes in the Late Cenozoic environment of the Gonghe Basin in Qinghai. [Qinghai Gonghe pendi wan xinshengdai huanjing bianqian]

Xu, S.Y., Qinghai Chaidamu pendi wan xinshengdai dizhi huanjing yanhua (Late Cenozoic geology and environmental evolution of the Qaidam Basin in Qinghai), Beijing, Kexue chubanshe (Science Press), 1986, p.19-33, In Chinese. 4 refs.

Geological surveys, Stratigraphy, Lacustrine deposits, Periglacial processes, Eolian soils, Fossils, Geochronology, Paleoclimatology, China—Qaidam Basin

50-1984

Basic characteristics and paleoclimatic evolution of Qarhan Salt Lake. [Chaerhan yanhu chenji de jiben tezheng ji qi guqihou yanhua]

Chen, K.Z., et al, Qinghai Chaidamu pendi wan xinshengdai dizhi huanjing yanhua (Late Cenozoic geology and environmental evolution of the Qaidam Basin in Qinghai), Beijing, Kexue chubanshe (Science Press), 1986, p.34-49, In Chinese. 7 refs.

Salt lakes, Lacustrine deposits, Bottom sediment, Drill core analysis, Geochemistry, Hydrogeochemistry, Stratigraphy, Paleoclimatology, China—Qaidam Basin

50-1985

Some geological problems regarding salt lakes on the Qinghai-Xizang Plateau. [Qingzang gaoyuan yanhu jige youguan dizhi wenti de taolun]

Zhang, P.X., Qinghai Chaidamu pendi wan xinshengdai dizhi huanjing yanhua (Late Cenozoic geology and environmental evolution of the Qaidam Basin in Qinghai), Beijing, Kexue chubanshe (Science Press), 1986, p.50-58, In Chinese. 6 refs.

Salt lakes, Lacustrine deposits, Bottom sediment, Exploration, Minerals, Geochemistry, Hydrogeochemistry, Stratigraphy, Paleoclimatology, China—Qinghai-Xizang Plateau

50-1986

Pollen assemblages from borehole CK1/81 in Dabsan Lake and their geographical and botanical significance. [Dabuxunhu CK1/81 zuankong baofen zuhe ji qi zai dilixue he zhiwuxueshang de yiyi]

Du, N.Q., Kong, Z.C., Qinghai Chaidamu pendi wan xinshengdai dizhi huanjing yanhua (Late Cenozoic geology and environmental evolution of the Qaidam Basin in Qinghai), Beijing, Kexue chubanshe (Science Press), 1986, p.59-70, In Chinese. 8 refs.

Salt lakes, Lacustrine deposits, Bottom sediment, Pollen, Palynology, Drill core analysis, Stratigraphy, Paleobotany, Paleoclimatology, China—Qaidam Basin

50-1987

Formation conditions for sylvites and accumulation processes for salts in the Qaidam Basin. [Chaidamu pendi jiayan xingcheng tiaojian ji yanlei juji guocheng]

Yang, Q., Qinghai Chaidamu pendi wan xinshengdai dizhi huanjing yanhua (Late Cenozoic geology and environmental evolution of the Qaidam Basin in Qinghai), Beijing, Kexue chubanshe (Science Press), 1986, p.71-78, In Chinese. 8 refs.

Salt lakes, Lacustrine deposits, Saline soils, Soil formation, Minerals, Geochemistry, Stratigraphy, Exploration, Paleoclimatology, China—Qaidam Basin

50-1988

Chemistry of salt minerals and their depositional environment in the Qaidam Basin. [Chaidamu pendi shiyan kuangwu huaxue de yanjiu ji qi chenji huanjing de tantao]

Dong, J.H., Qinghai Chaidamu pendi wan xinshengdai dizhi huanjing yanhua (Late Cenozoic geology and environmental evolution of the Qaidam Basin in Qinghai), Beijing, Kexue chubanshe (Science Press), 1986, p.79-86, In Chinese. 5 refs.

Salt lakes, Lacustrine deposits, Bottom sediment, Minerals, Geochemistry, Exploration, Stratigraphy, Paleoclimatology, China—Qaidam Basin

50-1989

Distribution, growth, and variation of glaciers in the Kunlun Mountains. [Kunlunshan bingchuan fenbu, fayu ji qi bianhua]

Zhang, Z.S., Jiao, K.Q., Qinghai Chaidamu pendi wan xinshengdai dizhi huanjing yanhua (Late Cenozoic geology and environmental evolution of the Qaidam Basin in Qinghai), Beijing, Kexue chubanshe (Science Press), 1986, p.87-99, In Chinese. 13 refs.

Mountain glaciers, Alpine glaciation, Glacial geology, Glacier surveys, Glacier alimentation, Glacier formation, Glacier oscillation, Snow line, Paleoclimatology, China—Kunlun Mountains

50-1990

Preliminary study on fossil dunes in the Qaidam Basin. [Chaidamu pendi gushaqiu de chubu yanjiu]

Zhong, D.C., Qinghai Chaidamu pendi wan xinshengdai dizhi huanjing yanhua (Late Cenozoic geology and environmental evolution of the Qaidam Basin in Qinghai), Beijing, Kexue chubanshe (Science Press), 1986, p.100-103, In Chinese. 5 refs.

Geological surveys, Soil surveys, Eolian soils, Desert soils, Quaternary deposits, Soil formation, Soil dating, Paleoclimatology, China—Qaidam Basin

50-1991

Tentative discussion on the relationship between the Malan loess and the strata of the Sala Us Formation along the banks of the Sala Us River in Inner Mongolia and their environmental evolution. [Shilun Nei Menggu Salawusuhe yanan Malan huangtu yu Salawusuzu diceng de guanxi ji qi huanjing yanhua]

Dong, G.R., Li, B.S., Qinghai Chaidamu pendi wan xinshengdai dizhi huanjing yanhua (Late Cenozoic geology and environmental evolution of the Qaidam Basin in Qinghai), Beijing, Kexue chubanshe (Science Press), 1986, p.104-132, In Chinese. 31 refs.

Geological surveys, Soil surveys, Loess, Eolian soils, Desert soils, Quaternary deposits, Soil formation, Soil dating, Fossils, Palynology, Stratigraphy, Paleoclimatology, China—Inner Mongolia

50-1992

Lithium and boron geochemistry of salt lakes in the Qaidam Basin. [Chaidamu pendi yanhu Li, B diqiuhuaxue]

Zheng, X.Y., Qinghai Chaidamu pendi wan xinshengdai dizhi huanjing yanhua (Late Cenozoic geology and environmental evolution of the Qaidam Basin in Qinghai), Beijing, Kexue chubanshe (Science Press), 1986, p.133-147, In Chinese. 8 refs.

Salt lakes, Lacustrine deposits, Bottom sediment, Saline soils, Soil surveys, Soil composition, Soil formation, Geochemistry, Hydrogeochemistry, Stratigraphy, Paleoclimatology, China—Qaidam Basin

50-1993

Some paleomagnetic study results in the Kunteyi Lake region of the Qaidam Basin. [Chaidamu pendi Kunteyihu qu mouxie gudici de yanjiu jieguo]

An, Z.S., Qinghai Chaidamu pendi wan xinshengdai dizhi huanjing yanhua (Late Cenozoic geology and environmental evolution of the Qaidam Basin in Qinghai), Beijing, Kexue chubanshe (Science Press), 1986, p.148-151, In Chinese. 1 ref.

Salt lakes, Lacustrine deposits, Quaternary deposits, Saline soils, Soil surveys, Soil dating, Stratigraphy, Magnetic surveys, Remanent magnetism, Paleoclimatology, China—Qaidam Basin

50-1994

Observations of several Quaternary profiles and preliminary study on eolian deposits in the Qarhan Salt Lake region. [Chaerhan yanhu diqu jige disiji poumian de guancha yu fengcheng chenji de chutan]

Wang, J.D., Wang, S.X., Qinghai Chaidamu pendi wan xinshengdai dizhi huanjing yanhua (Late Cenozoic geology and environmental evolution of the Qaidam Basin in Qinghai), Beijing, Kexue chubanshe (Science Press), 1986, p.152-156, In Chinese. 2 refs.

Salt lakes, Lacustrine deposits, Saline soils, Quaternary deposits, Soil surveys, Soil dating, Soil composition, Soil profiles, Stratigraphy, Paleoclimatology, China—Qaidam Basin

50-1995

Collected papers on the Quaternary in arid region Xinjiang. [Ganhanqu Xinjiang disiji yanjiu lunwenji]

Xinjiang University, Xinjiang Geology and Mineral Resources Bureau, Xinjiang Branch Academy of Sciences, Urumqi, Xinjiang renmin chubanshe (Xinjiang People's Publishing House), 1985, 191p., In Chinese. Refs. passim. For selected papers see 50-1996 through 50-2008.

DLC QC884.K36 1985 Orien China

Alpine glaciation, Glacial geology, Glacial deposits, Quaternary deposits, Stratigraphy, Pleistocene, Geochronology, Paleoclimatology, China—Xinjiang, China—Tian Shan

50-1996

Climatic variation of Xinjiang in recent 3000 years.

Li, J.F., Ganhanqu Xinjiang disiji yanjiu lunwenji (Collected papers on the Quaternary in arid region Xinjiang), Urumqi, Xinjiang renmin chubanshe (Xinjiang People's Publishing House), 1985, p.1-7, In Chinese with English summary. 13 refs.

Climatic changes, Paleoclimatology, Desiccation, Deserts, Precipitation (meteorology), Air temperature, Glacier oscillation, Snow line, China—Xinjiang

50-1997

On the environmental and climatic changes in the Lop Nur area.

Xia, X.C., Fan, Z.L., Ganhanqu Xinjiang disiji yanjiu lunwenji (Collected papers on the Quaternary in arid region Xinjiang), Urumqi, Xinjiang renmin chubanshe (Xinjiang People's Publishing House), 1985, p.8-20, In Chinese with English summary. 12 refs.

Deserts, Climatic changes, Paleoclimatology, Desiccation, Human factors, China—Xinjiang

50-1998

On the sedimentary environment of the Late Pleistocene in the Cangfanggou Formation near Urumqi.

Han, S.T., Ye, W., Ganhanqu Xinjiang disiji yanjiu lunwenji (Collected papers on the Quaternary in arid region Xinjiang), Urumqi, Xinjiang renmin chubanshe (Xinjiang People's Publishing House), 1985, p.21-31, In Chinese with English summary. 4 refs.

Quaternary deposits, Stratigraphy, Lithology, Geochemistry, Periglacial processes, Soil dating, Fossils, Geochronology, Pleistocene, Paleoecology, Paleoclimatology, China—Xinjiang

50-1999

On the sedimentary environment in the northern piedmont of the eastern Tian Shan Mountains.

Han, S.T., Ganhanqu Xinjiang disiji yanjiu lunwenji (Collected papers on the Quaternary in arid region Xinjiang), Urumqi, Xinjiang renmin chubanshe (Xinjiang People's Publishing House), 1985, p.32-41, In Chinese with English summary. 6 refs.

Quaternary deposits, Stratigraphy, Paleoclimatology, China—Tian Shan

50-2000

Glacial drift and the glacial epoch in the Quaternary period of Xinjiang.

Peng, X.L., Ganhanqu Xinjiang disiji yanjiu lunwenji (Collected papers on the Quaternary in arid region Xinjiang), Urumqi, Xinjiang renmin chubanshe (Xinjiang People's Publishing House), 1985, p.42-54, In Chinese with English summary. 7 refs.

Alpine glaciation, Glacial deposits, Glacial till, Moraines, Quaternary deposits, Pleistocene, Geochronology, Paleoclimatology, China—Xinjiang

50-2001

On the Quaternary paleoglacial action of the northern Tianshan.

Zhang, H.Y., Ganhanqu Xinjiang disiji yanjiu lunwenji (Collected papers on the Quaternary in arid region Xinjiang), Urumqi, Xinjiang renmin chubanshe (Xinjiang People's Publishing House), 1985, p.55-68, In Chinese with English summary. 17 refs.

Alpine glaciation, Glacial geology, Glacial deposits, Moraines, Quaternary deposits, Pleistocene, Stratigraphy, Geochronology, Paleoclimatology, China—Tian Shan

50-2002

On the sedimentary environment of the glaciofluvial terraces of the Tian Shan Mountains near Urumqi.

Han, S.T., Ganhanqu Xinjiang disiji yanjiu lunwenji (Collected papers on the Quaternary in arid region Xinjiang), Urumqi, Xinjiang renmin chubanshe (Xinjiang People's Publishing House), 1985, p.69-80, In Chinese with English summary. 5 refs.

Alpine glaciation, Glacial geology, Glacial deposits, Outwash, Quaternary deposits, Terraces, Stratigraphy, Geochronology, Paleoclimatology, China—Tian Shan

50-2003

Loess layer and the palaeoclimate of northern piedmont of Tian Shan.

Zhang, H.Y., Wang, H.Z., Han, S.T., Gao, S.L., Ganhanqu Xinjiang disiji yanjiu lunwenji (Collected papers on the Quaternary in arid region Xinjiang), Urumqi, Xinjiang renmin chubanshe (Xinjiang People's Publishing House), 1985, p.95-107, In Chinese with English summary. 11 refs.

Loess, Eolian soils, Outwash, Alluvium, Quaternary deposits, Soil formation, Soil dating, Stratigraphy, Geochronology, Paleoclimatology, China—Tian Shan

50-2004

Primary division of Quaternary in Xinjiang.

Yang, Z.X., Zhang, H.Y., Ganhanqu Xinjiang disiji yanjiu lunwenji (Collected papers on the Quaternary in arid region Xinjiang), Urumqi, Xinjiang renmin chubanshe (Xinjiang People's Publishing House), 1985, p.108-120, In Chinese with English summary. 11 refs.

Glaciation, Glacial geology, Glacial deposits, Quaternary deposits, Stratigraphy, Geochronology, Paleoclimatology, China—Xinjiang

50-2005

Depositional sequence of the Quaternary period in Xinjiang.

Peng, X.L., Ganhanqu Xinjiang disiji yanjiu lunwenji (Collected papers on the Quaternary in arid region Xinjiang), Urumqi, Xinjiang renmin chubanshe (Xinjiang People's Publishing House), 1985, p.121-136, In Chinese with English summary. 10 refs.

Glacial geology, Glacial deposits, Glacial till, Eolian soils, Alluvium, Quaternary deposits, Pleistocene, Stratigraphy, Tectonics, Geochronology, Paleoclimatology, China—Xinjiang

50-2006
Delimiting problems of the Early Pleistocene strata and the Quaternary lower boundary in northern Xinjiang.
Lu, S.A., Ganhanqu Xinjiang disiji yanjiu lunwenji (Collected papers on the Quaternary in arid region Xinjiang), Urumqi, Xinjiang renmin chubanshe (Xinjiang People's Publishing House), 1985, p.137-146, In Chinese with English summary.
Pleistocene, Quaternary deposits, Stratigraphy, Fossils, Geochronology, Paleoclimatology, China—Xinjiang

50-2007
Discussion on the division and correlation of Holocene series in Xinjiang.
Bai, M.X., Ganhanqu Xinjiang disiji yanjiu lunwenji (Collected papers on the Quaternary in arid region Xinjiang), Urumqi, Xinjiang renmin chubanshe (Xinjiang People's Publishing House), 1985, p.147-161, In Chinese with English summary. 18 refs.
Quaternary deposits, Soil surveys, Soil classification, Soil profiles, Soil dating, Stratigraphy, Geochronology, Paleoclimatology, China—Xinjiang

50-2008
Problem on dividing the neotectonic units in Xinjiang.
Bai, M.X., Ganhanqu Xinjiang disiji yanjiu lunwenji (Collected papers on the Quaternary in arid region Xinjiang), Urumqi, Xinjiang renmin chubanshe (Xinjiang People's Publishing House), 1985, p.162-172, In Chinese with English summary. 32 refs.
Tectonics, Geologic structures, Continental drift, Geochronology, Paleoclimatology, China—Xinjiang

50-2009
Quaternary insects and their environments.
Elias, S.A., Washington, D.C., Smithsonian Institution Press, 1994, 284p., Refs. p.233-271.
DLC QE831.E45 1993
Quaternary deposits, Fossils, Paleoecology, Paleoclimatology, Global change, Stratigraphy, Geochronology

50-2010
Quaternary of the loess plateau. [Huangtu gaoyuan disiji]
Sun, J.Z., ed, Zhao, J.B., ed, Beijing, Kexue chubanshe (Science Press), 1991, 242p. + plates, In Chinese with English summary on the back cover, captions to the plates, and table of contents. Refs. p.229-238. Based on the 13th INQUA (International Union for Quaternary Research) Congress, Beijing, Aug. 2-9, 1991.
DLC QE696.H84 1991 Orien China
Loess, Quaternary deposits, Eolian soils, Cryogenic soils, Soil surveys, Soil formation, Soil dating, Soil profiles, Soil composition, Stratigraphy, Paleoclimatology, China

50-2011
Research on the natural resources and environment of the Ordos Plateau in Inner Mongolia. [Nei Menggu Eerduosi gaoyuan ziran ziyuan yu huanjing yanjiu]
Li, B., ed, Shi, P.J., ed, Li, T.J., ed, Chen, Q.L., ed, Yang, M.H., ed, Beijing, Kexue chubanshe (Science Press), 1990, 225p., In Chinese. 165 refs. Edited by the Yeghe Jo League Squad of the Inner Mongolian Grassland Resources Remote Sensing Applications Expedition (Nei Menggu caochang ziyuan yaogan yingyong kaochadui Yikezhaomeng fendui).
DLC HC428.I39N45 1990 Orien China
Deserts, Steppes, Natural resources, Topographic surveys, Soil surveys, Soil conservation, Vegetation patterns, Plant ecology, Regional planning, China—Ordos Desert

50-2012
Growth and decay of the Late Weichselian ice sheet in western Svalbard and adjacent areas based on provenance studies of marine sediments.
Elverhøi, A., et al, *Quaternary research,* Nov. 1995, 44(3), p.303-316, 36 refs.
Pleistocene, Ice sheets, Glacier oscillation, Quaternary deposits, Ice rafting, Sedimentation, Marine geology, Coring, Radioactive age determination, Correlation, Barents Sea, Norway—Svalbard

50-2013
Glacial-geological/geomorphological research in West Greenland used to test an ice-sheet model.
Van Tatenhove, F.G.M., Van der Meer, J.J.M., Huybrechts, P., *Quaternary research,* Nov. 1995, 44(3), p.317-327, 32 refs.
Climatology, Pleistocene, Ice sheets, Glacial geology, Geomorphology, Glacier oscillation, Ice edge, Quaternary deposits, Moraines, Sampling, Radioactive age determination, Mathematical models, Ice models, Greenland

50-2014
Margin of the last Barents-Kara ice sheet at Markhida, northern Russia.
Tveranger, J., Astakhov, V., Mangerud, J., *Quaternary research,* Nov. 1995, 44(3), p.328-340, 25 refs.
Marine geology, Pleistocene, Glacial geology, Ice sheets, Ice edge, Glacier oscillation, Quaternary deposits, Moraines, Stratigraphy, Radioactive age determination, Russia—Markhida

50-2015
GISP2 ^{18}O climate record of the past 16,500 years and the role of the sun, ocean, and volcanoes.
Stuiver, M., Grootes, P.M., Braziunas, T.F., *Quaternary research,* Nov. 1995, 44(3), p.341-354, 63 refs.
Paleoclimatology, Climatic changes, Ice sheets, Ice cores, Oxygen isotopes, Isotope analysis, Snow accumulation, Volcanic ash, Ocean currents, Correlation, Greenland

50-2016
Deposition of organic matter in the Norwegian-Greenland Sea during the past 2.7 million years.
Wagner, T., Hölemann, J.A., *Quaternary research,* Nov. 1995, 44(3), p.355-366, 73 refs.
Marine geology, Pleistocene, Ice rafting, Oceanography, Marine deposits, Glacial deposits, Quaternary deposits, Sampling, Classifications, Geochemistry, Greenland Sea

50-2017
Biostratigraphic evidence of the Allerød-Younger Dryas-Preboreal oscillation in northern Iceland.
Rundgren, M., *Quaternary research,* Nov. 1995, 44(3), p.405-416, 65 refs.
Quaternary deposits, Paleobotany, Paleoclimatology, Climatic changes, Lacustrine deposits, Stratigraphy, Palynology, Vegetation patterns, Tundra vegetation, Correlation, Iceland

50-2018
Calibration of radiocarbon ages and the interpretation of paleoenvironmental records.
Bartlein, P.J., Edwards, M.E., Shafer, S.L., Barker, E.D., Jr., *Quaternary research,* Nov. 1995, 44(3), p.417-424, 51 refs.
Pleistocene, Paleoecology, Paleoclimatology, Quaternary deposits, Geochronology, Radioactive age determination, Correlation, Accuracy, Vegetation patterns

50-2019
Ab initio study of the molecular structure and vibrational spectra of dichlorine hexoxide and its significance to stratospheric ozone depletion.
Parthiban, S., Raghunandan, B.N., Sumathi, R., *Chemical physics,* Oct. 15, 1995, 199(2-3), p.183-193, 39 refs.
Polar atmospheres, Aerosols, Stratosphere, Cloud physics, Atmospheric attenuation, Ozone, Chemical properties, Molecular structure, Simulation

To model polar stratospheric chemical reactions, five minimum energy structures have been identified for dichlorine hexoxide and ab initio calculations have been performed on these isomers. Among the five structures, the oxygen-bridged structure and a symmetrical dimer containing a Cl-Cl bond were found to be stable. Normal mode analysis has been carried out on the stable conformers. The relative strength of the O_3Cl-O and O-ClO_2 bonds of the oxygen-bridged structure is discussed on the basis of their vibrational frequencies. In addition, the paper focuses attention on the great importance of the reaction $2OClO + 2O_3 \rightarrow Cl_2O_6 + 2O_2$. The implications of these results for the chemistry of stratospheric ozone depletion are delineated. (Auth. mod.)

50-2020
Atmospheric hydrologic cycle over the southern ocean and Antarctica from operational numerical analysis.
Bromwich, D.H., Robasky, F.M., Cullather, R.I., Van Woert, M.L., *Monthly weather review,* Dec. 1995, 123(12), p.3518-3538, 56 refs.
Climatology, Polar atmospheres, Marine meteorology, Atmospheric composition, Atmospheric circulation, Hydrologic cycle, Humidity, Moisture transfer, Precipitation (meteorology), Sounding, Periodic variations, Mathematical models

Moisture budget calculations for Antarctica and the southern ocean are performed using operational numerical analyses from the European Centre for Medium-Range Weather Forecasts (ECMWF), the National Meteorological Center (NMC), and the Australian Bureau of Meteorology (ABM). The analyses are intercompared for an 8-yr period from 1985 to 1992 and are evaluated against representative rawinsonde sites, which are considered accurate depictions of moisture transport at these sites. The comparisons to East Antarctic rawinsondes and those from Macquarie I. show the ECMWF analyses to be superior in reproducing sounding values at each level. While results are highly variable depending on the station location, agreement of the ECMWF analyses to zonally averaged sounding moisture flux values along the East Antarctic coast is very close. Comparison of the moisture transport convergence derived from the numerical analyses with previous moisture flux studies over the southern ocean reveals general agreement in the location of the boundary between the moisture source and sink. The ECMWF and NMC analyses place the convergence maximum slightly farther south than has been previously found. It is inferred that this results from the blocking effect of the antarctic coastal topography. The results presented here offer a substantially more positive outlook on the prospects of determining continental-scale precipitation trends in Antarctica through atmospheric methods than has been previously found and demonstrate that the ECMWF analyses provide generally good estimates. (Auth. mod.)

50-2021
NMR study of phase transitions in pure water and binary H_2O/HNO_3 films adsorbed on surface of pyrogenic silica.
Bogdan, A., Kulmala, M., Gorbunov, B., Kruppa, A., *Journal of colloid and interface science,* Jan. 15, 1996, 177(1), p.79-87, 36 refs.
Ice spectroscopy, Ice physics, Nuclear magnetic resonance, Spectra, Phase transformations, Ice solid interface, Aerosols, Adsorption, Water films, Freezing points, Temperature effects, Cloud physics, Simulation

50-2022
High precision ^{230}Th and ^{238}Th in the Norwegian Sea and Denmark by thermal ionization mass spectrometry.
Moran, S.B., Hoff, J.A., Buesseler, K.O., Edwards, R.L., *Geophysical research letters,* Oct. 1, 1995, 22(19), p.2589-2592, 24 refs.
Oceanography, Sea water, Sediments, Hydrography, Radioactive isotopes, Isotope analysis, Sampling, Correlation, Origin, Advection, Norwegian Sea, Denmark Strait

50-2023
Costs and benefits of winter maintenance. [Kosten und Nutzen des Winterdienstes]
Durth, W., *Straße + Autobahn,* Sep. 1995, 46(9), p.505-509, In German. 2 refs.
Road maintenance, Winter maintenance, Cost analysis

50-2024
Calorimetric study of water two-dimensionally condensed on the homogeneous surface of a solid.
Nagao, M., Kumashiro, R., Matsuda, T., Kuroda, Y., *Thermochimica acta,* Apr. 3, 1995, Vol.253, International and Sino-Japanese Symposium (3rd) on Thermal Measurements, Xi'an, China, June 4-6, 1994, p.221-233, 25 refs.
Water structure, Molecular structure, Adsorption, Ice solid interface, Thermodynamic properties, Temperature measurement, Dielectric properties, Molecular energy levels

50-2025
Microbial activity of tundra and taiga soils at sub-zero temperatures.
Clein, J.S., Schimel, J.P., *Soil biology & biochemistry,* Sep. 1995, 27(9), p.1231-1234, 13 refs.
Soil microbiology, Tundra soils, Taiga, Soil tests, Frozen ground chemistry, Sampling, Temperature effects, Ecosystems

50-2026

Infrasonic signatures of a polar low in the Norwegian and Barents Sea on 23-27 March 1992.

Ørbæk, J.B., Naustvik, M., *Tellus,* Oct. 1995, 47A(5:2), p.921-940, 15 refs.

Polar atmospheres, Marine meteorology, Fronts (meteorology), Convection, Atmospheric pressure, Turbulent boundary layer, Atmospheric disturbances, Sodar, Sound transmission, Spectra, Cloud cover, Correlation, Barents Sea, Norwegian Sea

50-2027

Greenland palaeotemperatures derived from GRIP bore hole temperature and ice core isotope profiles.

Johnsen, S.J., Dahl-Hensen, D., Dansgaard, W., Gundestrup, N., *Tellus,* Nov. 1995, 47B(5), p.624-629, 30 refs.

Paleoclimatology, Climatic changes, Ice sheets, Ice cores, Boreholes, Ice temperature, Surface temperature, Correlation, Isotope analysis, Profiles, Greenland

50-2028

Effects of pore size distribution on permeability and frost susceptibility of selected subgrade materials.

Wood, L.E., Altschaeffl, A.G., Lovell, C.W., Purdue University. Engineering Experiment Station. Joint Highway Research Project. Report 82-17, West Lafayette, Oct. 1982, 30p., 11 refs.

Subgrade soils, Soil mechanics, Soil structure, Porosity, Distribution, Frost heave, Frost resistance, Clay soils, Soil compaction, Permeability

50-2029

Dynamic testing of frozen soil sample with an exploding wire system.

Fyfe, I.M., Mathematical Sciences Northwest, Inc. Report 68-53-1, Seattle, Mar. 1968, 37p., 4 refs.

Frozen ground mechanics, Mechanical tests, Soil tests, Shock waves, Exploding wires, Wave propagation, Stress concentration, Design

50-2030

Statistical analysis of Thayer Hill Road heave data.

Harr, M.E., McCabe, G.P., Purdue University. School of Civil Engineering. Report, West Lafayette, Apr. 1990, 17p. + appends., Report prepared for U.S Army Cold Regions Research and Engineering Laboratory, Hanover, NH.

Roads, Soil structure, Sampling, Geocryology, Frost heave, Soil physics, Particle size distribution, Water content, Statistical analysis, Correlation

50-2031

Titan's surface: composition and variability from the near-infrared albedo.

Coustenis, A., Lellouch, E., Maillard, J.P., McKay, C.P., *Icarus,* Nov. 1995, 118(1), p.87-104, 37 refs.

Extraterrestrial ice, Satellites (natural), Surface structure, Ground ice, Albedo, Infrared radiation, Remote sensing, Spectroscopy, Spectra, Ice detection

50-2032

Fossil charophytes from the Qaidam Basin. [Chaidamu pendi lunzao huashi]

Tang, L.H., Di, H.S., Zhongguo youqiqu diceng gushengwu congshu (Series on stratigraphy and palaeontology of oil and gas bearing areas in China), Beijing, Kexue jishu wenxian chubanshe (Scientific and Technical Publications Publishing House), 1991, 220p. + plates, In Chinese with English title page on back cover and extended English summary. 125 refs.

DLC QE955.T36 1991 Orien China

Paleobotany, Paleoecology, Algae, Lacustrine deposits, Stratigraphy, Geochronology, China—Qaidam Basin

50-2033

Research on Tertiary palynology from the Qaidam Basin. [Chaidamu pendi disanji baofenxue yanjiu]

Zhu, Z.H., Wu, L.Y., Xi, P., Song, Z.C., Zhang, Y.Y., Beijing, Shiyou gongye chubanshe (Petroleum Industry Press), 1985, 297p. + plates, In Chinese with English title page on back cover and extended English summary. 133 refs. Edited by the Research Institute of Exploration and Development of the Qinghai Petroleum Administration (Qinghai shiyo guanliju Kantan kaifa yanjiusuo) and Nanjing Institute of Geology and Paleontology of the Chinese Academy of Sciences (Zhongguo kexueyuan Nanjing dizhi gushengwu yanjiusuo).

DLC QE993.C467 1985 Orien China

Paleobotany, Paleoecology, Palynology, Stratigraphy, Geochronology, China—Qaidam Basin

50-2034

Progress report on studies to explain the mechanisms of desertification. [Sabakuka no kiko kaimei to ni kansuru chosa seika hokokusho], Tokyo, Kagaku gijutsucho Kenkyu kaihatsukyoku (Science and Technology Agency. Research and Development Bureau), 1989, 94p. + appends., In Japanese. Refs. p.88-94. Supported by Coordination Funds for Promoting Science and Technology for 1988 (Showa 63 nendo Kagaku gijutsu shinko choseihi).

DLC GB611.A23 1989

Deserts, Climatic changes, Global change, Paleoclimatology, Desiccation, Soil conservation, Research projects, Organizations, International cooperation, Meetings

50-2035

Promotion of industry in sparsely populated areas of heavy snow in Ishikawa Prefecture. [Ishikawa ken no gosetsu kaso chiiki ni okeru sangyo shinko]

Gomi, T., ed, Kubota, Y., ed, Nonoichimachi, Ishikawa Prefecture, Japan, Kokudo kaihatsu senta (National Land Development Center), Ltd., 1984, 179p., In Japanese with English table of contents on the inside back cover. 81 refs.

DLC HN730.I83I84 1984 Orien Japan

Regional planning, Economic development, Land development, Snowfall, Cold weather operation, Japan

50-2036

Current conditions and countermeasures in the snow belt—toward new initiatives in the snowy regions. [Gosetsu chitai no genjo to taisaku—atarashii yukiguni no sozo e mukete], Tokyo, Kokudocho Chiho shinkokyoku (National Land Agency. Local Development Bureau), 1985, 231p., In Japanese. 23 refs.

DLC HT395.J3G67 1985 Orien Japan

Snowstorms, Snowfall, Snow cover distribution, Snow removal, Regional planning, Highway planning, Road maintenance, Cold weather operation, Cost analysis, Japan

50-2037

Current conditions and countermeasures in the snow belt—towards expanding decent residential and community life in the snowy regions. [Gosetsu chitai no genjo to taisaku—kaiteki na yukiguni teiju to koryu no hakudai ni mukete], Tokyo, Kokudocho Chiho shinkokyoku (National Land Agency. Local Development Bureau), 1988, 185p. + appends., In Japanese. 26 refs.

DLC HT395.J32J34 1988 Orien Japan

Snowstorms, Snowfall, Snow cover distribution, Snow removal, Regional planning, Highway planning, Road maintenance, Cold weather operation, Cost analysis, Japan

50-2038

Current conditions and countermeasures in the snow belt—towards snowy regions with vitality and charm. [Gosetsu chitai no genjo to taisaku—katsuryoku to miryoku aru yukiguni zukuri ni mukete], Tokyo, Kokudocho Chiho shinkokyoku (National Land Agency. Local Development Bureau), 1991, 416p., In Japanese. 23 refs.

DLC HT395.J32J34 1991 Orien Japan

Snowstorms, Snowfall, Snow cover distribution, Snow removal, Regional planning, Highway planning, Road maintenance, Cold weather operation, Cost analysis, Japan

50-2039

Study on integrated system design for regional development in snowy regions. [Sekisetsu chiiki no chiiki kaihatsu no sogo shisutemu sekkei ni kansuru kenkyu], NIRA kenkyu sosho (research series), No.890048, Tokyo, Sogo kenkyu kaihatsu kiko (National Institute for Research Advancement), 1989, 143p., In Japanese. 17 refs.

DLC HT395.J32J37 1989 Orien Japan

Snow removal, Regional planning, Road maintenance, Cold weather operation, Cold weather construction, Buildings, Economic development, Computer applications, Japan

50-2040

Study of heavy snowfall in Tohoku District. [Tohoku chiho no oyuki no kenkyu], Sendai, Miyagi Prefecture, Japan, Sendai kanku kishodai (Sendai District Meteorological Observatory), 1989, 115p., In Japanese. Refs. passim.

DLC QC926.45.J32T648 1989 Orien Japan

Snow surveys, Snowstorms, Snowfall, Snow depth, Snow cover distribution, Weather forecasting, Weather stations, Meteorological data, Japan

50-2041

Development of field technology and methods for forecasting snowfall and snow cover. [Kosetsu sekisetsu yosoku ni tsuite no gengyoteki gijutsu shuho no kaihatsu], Osaka, Osaka kanku kishodai (Osaka District Meteorological Observatory), 1989, 187p., In Japanese. Refs. passim.

DLC QC929.S7K67 1989 Orien Japan

Snow surveys, Snowstorms, Snowfall, Snow depth, Snow cover distribution, Marine meteorology, Atmospheric circulation, Meteorological data, Weather forecasting, Japan

50-2042

Study on estimating snow cover. [Sekisetsuryo suitei ni kansuru kankyu], Tokyo, Kagaku gijutsucho Shigen chosajo (Science and Technology Agency. National Institute of Resources), 1983, 227p., In Japanese.

DLC QC929.S7S39 1983 Orien Japan

Snow surveys, Snowstorms, Snowfall, Snow depth, Snow cover distribution, Weather forecasting, Meteorological data, Spaceborne photography, Statistical analysis, Japan

50-2043

Snow and living conditions. [Yuki to seikatsu]

Yoshino, M., ed, Tokyo, Taimeido Publishing, 1988, 211p., In Japanese. Refs. passim. For individual papers see 50-2044 through 50-2052.

DLC QC929.S7Y86 1988 Orien Japan

Snowfall, Snow cover distribution, Snowstorms, Regional planning, Economic development, Japan

50-2044

Japanese and snow. [Nihonjin to yuki]

Yoshino, M., Yuki to seikatsu (Snow and living conditions). Edited by M. Yoshino, Tokyo, Taimeido Publishing, 1988, p.5-32, In Japanese. 19 refs.

Snowstorms, Snowfall, Snow removal, Regional planning, Cold weather operation, Accidents, Cost analysis, Japan

50-2045

Snow distribution in Japan. [Nihon ni okeru yuki no bunpu]

Shitara, H., Yuki to seikatsu (Snow and living conditions). Edited by M. Yoshino, Tokyo, Taimeido Publishing, 1988, p.35-81, In Japanese. 90 refs.

Snowfall, Snow cover distribution, Snow water content, Snowstorms, Precipitation (meteorology), Marine meteorology, Atmospheric circulation, Weather forecasting, Japan

50-2046

Snow cover and microrelief. [Sekisetsu to shochikei]

Fukuoka, Y., Yuki to seikatsu (Snow and living conditions). Edited by M. Yoshino, Tokyo, Taimeido Publishing, 1988, p.82-97, In Japanese. 7 refs.

Snow cover distribution, Snow depth, Snow surface, Microrelief, Topographic effects, Climatic factors

50-2047

Urban snow disasters. [Toshi no setsugai]

Higashiura, M., Yuki to seikatsu (Snow and living conditions). Edited by M. Yoshino, Tokyo, Taimeido Publishing, 1988, p.98-123, In Japanese. 6 refs.

Snowstorms, Snowfall, Snow slides, Snow removal, Accidents, Urban planning, Weather forecasting, Japan

50-2048

Snow cover in the mountainous regions. [Sanchi no sekisetsu]

Yoshida, Y., Yuki to seikatsu (Snow and living conditions). Edited by M. Yoshino, Tokyo, Taimeido Publishing, 1988, p.124-136, In Japanese. 5 refs.

Mountains, Snow surveys, Snow cover distribution, Snow depth, Snow water equivalent, Japan

50-2049

Trends of the times related to snow. [Yuki to no kakawari no jidaiteki hensen]

Yagasaki, T., Yuki to seikatsu (Snow and living conditions). Edited by M. Yoshino, Tokyo, Taimeido Publishing, 1988, p.139-157, In Japanese. 12 refs.

Snowfall, Snow cover distribution, Regional planning, Human factors, Labor factors, Health, Education, Economic development, Cost analysis, Japan

50-2050

Significance of social trends and snow cover. [Shakai hendo to sekisetsu no igi]

Oishi, T., Yuki to seikatsu (Snow and living conditions). Edited by M. Yoshino, Tokyo, Taimeido Publishing, 1988, p.158-180, In Japanese. 9 refs.

Snowfall, Snow cover distribution, Regional planning, Economic development, Human factors, Education, Labor factors, Japan

50-2051

Snow and industry. [Yuki to kogyo]

Itakura, K., Yuki to seikatsu (Snow and living conditions). Edited by M. Yoshino, Tokyo, Taimeido Publishing, 1988, p.181-194, In Japanese. 7 refs.

Snowstorms, Regional planning, Economic development, Japan

50-2052

House construction in deep snow regions. [Shinsetsu chiiki no kaoku kozo]

Ujie, T., Yuki to seikatsu (Snow and living conditions). Edited by M. Yoshino, Tokyo, Taimeido Publishing, 1988, p.195-211, In Japanese. 5 refs.

Snowfall, Snow cover distribution, Snow loads, Houses, Cold weather construction, Japan

50-2053

Device for strengthening ground using buried components. [Ustroĭstvo dlia ukrepleniia grunta pogruzhnymi elementami]

Ostiukov, B.S., et al, *USSR. Komitet po delam izobretenii i otkrytii. Patent,* July 23, 1992, 4p., SOVP-1749341/A1, In Russian.

Shore erosion, Bank protection (waterways), Water erosion, Design, Hydraulic structures, Countermeasures, Machinery

50-2054

Covering. [Pokrytie]

Kreĭman, A.B., *USSR. Komitet po delam izobretenii i otkrytii,* 1982, 2p., SOVP-1747626/A1, In Russian. 1 ref.

Cold weather construction, Covering, Insulation, Snow cover, Countermeasures, Roofs

50-2055

Thermoplastic, aqueous latex paints having improved wet adhesion and freeze-thaw stability.

Farwaha, R., Currie, W., *U.S. Patent Office. Patent,* Mar. 21, 1995, 6p., USP-5,399,617, Continuation-in-part of U.S. Ser. no. 64,682, abandoned.

Protective coatings, Freeze thaw cycles, Paints

50-2056

Imprint of meteoric water on the stable isotope compositions of igneous and secondary minerals, Kap Edvard Holm Complex, East Greenland.

Brandriss, M.E., Nevle, R.J., Bird, D.K., O'Neil, J.R., *Contributions to mineralogy and petrology,* Aug. 1995, 121(1), p.74-86, 56 refs.

Sea water, Chemical composition, Geochemistry, Mineralogy, Greenland—Kap Edvard Holm

50-2057

World Oil's handbook of arctic well completions.

Goodman, M.A., *World oil,* 1978, p.5-52, 154 refs.

Petroleum industry, Offshore drilling, Oil wells, Gas wells, Boreholes, Permafrost physics, Subsea permafrost, Permafrost transformation, Permafrost preservation, Frozen ground mechanics, Frozen ground thermodynamics, Freeze thaw cycles, Design, Cold weather construction, Well casings, Thermal insulation, Arctic Ocean

50-2058

Frost heave investigation of I 275.

Novak, E.C., Jr., Michigan Department of Transportation. Testing and Research Division. Research report R-1194, Lansing, Apr. 1982, 55p., 3 refs.

Road maintenance, Pavement bases, Frost action, Frost heave, Seepage, Deformation, Cracking (fracturing), Drains, Sealing, Countermeasures

50-2059

Russian-German cooperation: Laptev Sea system.

Kassens, H., ed, Piepenburg, D., ed, Thiede, J., ed, Timokhov, L., ed, Hubberten, H.W., ed, Priamikov, S.M., ed, *Berichte zur Polarforschung,* 1995, No.176, 381p., Refs. passim. For individual papers see 50-2060 through 50-2108.

Oceanography, Oceanographic surveys, Marine geology, Estuaries, Runoff, Deltas, Ice rafting, Ice scoring, Sea ice distribution, Ice solid interface, Sediment transport, Suspended sediments, Sedimentation, Ocean bottom, Bottom sediment, Geochemistry, Sampling, Tectonics, Russia—Laptev Sea

50-2060

Investigations of air-sea interactions carried out during the TRANSDRIFT II Expedition.

Afanas'eva, IU., Lamakin, M., Timachev, V., *Berichte zur Polarforschung,* 1995, No.176, Russian-German Cooperation: Laptev Sea system. Edited by H. Kassens et al, p.3-6.

Oceanography, Marine meteorology, Air ice water interaction, Surface temperature, Heat balance, Heat flux, Ice cover effect, Russia—Laptev Sea

50-2061

Composition of aerosols over the Laptev, the Kara, the Barents, the Greenland and the Norwegian Sea.

Shevchenko, V.P., et al, *Berichte zur Polarforschung,* 1995, No.176, Russian-German Cooperation: Laptev Sea system. Edited by H. Kassens et al, p.7-16, 22 refs.

Oceanography, Marine meteorology, Atmospheric boundary layer, Atmospheric composition, Aerosols, Air pollution, Sampling, Chemical analysis, Environmental tests, Arctic Ocean, Greenland Sea, Norwegian Sea, Russia—Laptev Sea, Russia—Kara Sea, Barents Sea

50-2062

Satellite radar monitoring of ice drift in the Laptev Sea.

Aleksandrov, V.IU., Eicken, H., Kolatschek, J., *Berichte zur Polarforschung,* 1995, No.176, Russian-German Cooperation: Laptev Sea system. Edited by H. Kassens et al, p.17-19, 3 refs.

Oceanography, Ice surveys, Sea ice distribution, Drift, Spaceborne photography, Ice reporting, Russia—Laptev Sea

50-2063

Ice dynamics in the south-western Laptev Sea as derived from ERS-1 SAR images.

Kolatschek, J., Viehoff, T., Eicken, H., Nägelsbach, E., Aleksandrov, V.IU., *Berichte zur Polarforschung,* 1995, No.176, Russian-German Cooperation: Laptev Sea system. Edited by H. Kassens et al, p.20-24, 2 refs.

Oceanography, Ice surveys, Ice conditions, Sea ice distribution, Drift, Spaceborne photography, Synthetic aperture radar, Photointerpretation, Russia—Laptev Sea

50-2064

Full-scale field experiment carried out by the AARI in the south-eastern Laptev Sea (1976) and its main results.

Gorbunov, IU., Gudkovich, Z., Losev, S., *Berichte zur Polarforschung,* 1995, No.176, Russian-German Cooperation: Laptev Sea system. Edited by H. Kassens et al, p.25-27.

Oceanography, Sea ice distribution, Ice growth, Oceanographic surveys, Ice water interface, Heat flux, Drift, Russia—Laptev Sea

50-2065

Surface-based studies of microwave arctic sea ice signatures during end of summer and early autumn.

Darovskikh, A.N., *Berichte zur Polarforschung,* 1995, No.176, Russian-German Cooperation: Laptev Sea system. Edited by H. Kassens et al, p.28-31, 1 ref.

Oceanography, Sea ice, Ice surveys, Remote sensing, Radiance, Radiometry, Brightness, Meltwater

50-2066

Calculation of spectral albedo for a melt pond.

Makshtas, A., Podgornyĭ, I., *Berichte zur Polarforschung,* 1995, No.176, Russian-German Cooperation: Laptev Sea system. Edited by H. Kassens et al, p.32-37, 2 refs.

Oceanography, Sea ice, Optical properties, Albedo, Meltwater, Impurities, Ice water interface, Mathematical models

50-2067

Solution and stability of natural convective snow in a melt puddle.

Bogorodskiĭ, P.V., *Berichte zur Polarforschung,* 1995, No.176, Russian-German Cooperation: Laptev Sea system. Edited by H. Kassens et al, p.38-42, 6 refs.

Oceanography, Sea ice, Ice melting, Meltwater, Ice water interface, Convection, Stability, Mathematical models

50-2068

Catastrophic storm surges in the southern part of the Laptev Sea.

Ashik, I.M., Vanda, IU.A., *Berichte zur Polarforschung,* 1995, No.176, Russian-German Cooperation: Laptev Sea system. Edited by H. Kassens et al, p.43-46, 1 ref.

Oceanography, Sea level, Periodic variations, Air water interactions, Atmospheric pressure, Hydrodynamics, Forecasting, Russia—Laptev Sea

50-2069

Numerical prediction of sea surges and ice conditions on the Laptev and East-Siberian Sea.

Ashik, I.M., *Berichte zur Polarforschung,* 1995, No.176, Russian-German Cooperation: Laptev Sea system. Edited by H. Kassens et al, p.47-54, 7 refs.

Oceanography, Sea level, Periodic variations, Sea ice distribution, Ice conditions, Ice water interface, Ice cover effect, Mathematical models, Hydrodynamics, Forecasting, Russia—Laptev Sea

50-2070
Ice-thermal regime at front deltas of rivers of the Laptev Sea.
Nalimov, IU.V., *Berichte zur Polarforschung*, 1995, No.176, Russian-German Cooperation: Laptev Sea system. Edited by H. Kassens et al, p.55-61, 30 refs.
Oceanography, Estuaries, Deltas, Ice formation, Sea ice distribution, Ice conditions, Ice breakup, Thermal regime, Air ice water interaction, Russia—Laptev Sea

50-2071
Studies of clean and sediment-laden ice in the Laptev Sea.
Eicken, H., Viehoff, T., Martin, T., Kolatschek, J., Aleksandrov, V.IU., Reimnitz, E., *Berichte zur Polarforschung*, 1995, No.176, Russian-German Cooperation: Laptev Sea system. Edited by H. Kassens et al, p.62-70, 20 refs.
Oceanography, Ice surveys, Sea ice distribution, Drift, Ice structure, Ice cores, Suspended sediments, Stratigraphy, Sampling, Ice water interface, Russia—Laptev Sea

50-2072
Sediment transport by Laptev Sea ice.
Reimnitz, E., Kassens, H., Eicken, H., *Berichte zur Polarforschung*, 1995, No.176, Russian-German Cooperation: Laptev Sea system. Edited by H. Kassens et al, p.71-77, 2 refs.
Oceanography, Sea ice, Pack ice, Sedimentation, Sediment transport, Ice water interface, Ice rafting, Drift, Sampling, Russia—Laptev Sea

50-2073
Sea ice and sediment export from the Laptev Sea flaw lead during 1991/92 winter season.
Dethleff, D., *Berichte zur Polarforschung*, 1995, No.176, Russian-German Cooperation: Laptev Sea system. Edited by H. Kassens et al, p.78-93, 19 refs.
Oceanography, Sea ice distribution, Ice openings, Ice surveys, Sediment transport, Ice rafting, Ice formation, Air ice water interaction, Ice cover effect, Russia—Laptev Sea

50-2074
Circulation and water mass modifications along the Nansen Basin slope.
Schauer, U., Rudels, B., Muench, R.D., Timokhov, L., *Berichte zur Polarforschung*, 1995, No.176, Russian-German Cooperation: Laptev Sea system. Edited by H. Kassens et al, p.94-98, 4 refs.
Oceanography, Ocean currents, Hydrography, Salinity, Water transport, Russia—Laptev Sea

50-2075
Macro- and mesoscale hydrophysical structure of the outflow zone of the Lena River water to the Laptev Sea.
Golovin, P.N., Gribanov, V.A., Dmitrenko, I.A., *Berichte zur Polarforschung*, 1995, No.176, Russian-German Cooperation: Laptev Sea system. Edited by H. Kassens et al, p.99-106, 5 refs.
Oceanography, Ocean currents, Estuaries, Deltas, River flow, Runoff, Turbulent diffusion, Stratification, Russia—Lena River, Russia—Laptev Sea

50-2076
Cold bottom water in the southern Laptev Sea.
Churun, V.N., Timokhov, L.A., *Berichte zur Polarforschung*, 1995, No.176, Russian-German Cooperation: Laptev Sea system. Edited by H. Kassens et al, p.107-113, 7 refs.
Oceanography, Ocean bottom, Hydrography, Water temperature, Salinity, Stratification, Ice cover effect, Water transport, Russia—Laptev Sea

50-2077
Distribution of river run-off in the Laptev Sea: the environmental effect.
Dmitrenko, I.A., et al, *Berichte zur Polarforschung*, 1995, No.176, Russian-German Cooperation: Laptev Sea system. Edited by H. Kassens et al, p.114-120, 7 refs.
Oceanography, Estuaries, Runoff, River flow, Distribution, Turbulent diffusion, Hydrodynamics, Bottom topography, Topographic effects, Sedimentation, Russia—Laptev Sea

50-2078
Movement of Laptev Sea shelf waters during the TRANSDRIFT II Expedition.
Hass, H.C., Antonow, M., *Berichte zur Polarforschung*, 1995, No.176, Russian-German Cooperation: Laptev Sea system. Edited by H. Kassens et al, p.121-134, 8 refs.
Oceanography, Ocean currents, Hydrography, Velocity measurement, Russia—Laptev Sea

50-2079
Disbribution of oxygen and nutrients in the Laptev Sea in summer.
Pivovarov, S.V., Smagin, V.M., *Berichte zur Polarforschung*, 1995, No.176, Russian-German Cooperation: Laptev Sea system. Edited by H. Kassens et al, p.135-141, 5 refs.
Oceanography, Estuaries, Runoff, Hydrogeochemistry, Sedimentation, Turbulent diffusion, Russia—Laptev Sea

50-2080
Distribution of river water and suspended sediments in the river deltas of the Laptev Sea.
Ivanov, V.V., Piskun, A.A., *Berichte zur Polarforschung*, 1995, No.176, Russian-German Cooperation: Laptev Sea system. Edited by H. Kassens et al, p.142-153, 16 refs.
Oceanography, Estuaries, Deltas, Runoff, River flow, Sediment transport, Suspended sediments, Sampling, Russia—Laptev Sea, Russia—Lena River

50-2081
Chemical composition of suspended sediments in the Lena River and its mixing zone.
Gordeev, V.V., Shevchenko, V.P., *Berichte zur Polarforschung*, 1995, No.176, Russian-German Cooperation: Laptev Sea system. Edited by H. Kassens et al, p.154-169, 28 refs.
Oceanography, Estuaries, Runoff, River flow, Hydrogeochemistry, Suspended sediments, Turbulent diffusion, Sampling, Russia—Laptev Sea, Russia—Lena River

50-2082
Stable carbon isotope ratios in the waters of the Laptev Sea/Sep. 94.
Erlenkeuser, H., et al, *Berichte zur Polarforschung*, 1995, No.176, Russian-German Cooperation: Laptev Sea system. Edited by H. Kassens et al, p.170-177, 6 refs.
Oceanography, Water chemistry, Carbon dioxide, Hydrogeochemistry, Isotope analysis, Organic nuclei, Suspended sediments, Estuaries, Sampling, Russia—Laptev Sea

50-2083
Hydrooptical measurements in the Laptev Sea: spatial distributions of light attenuation and chlorophyll fluorescence.
Anoshkin, A.F., Popov, I.K., Ushakov, I.E., *Berichte zur Polarforschung*, 1995, No.176, Russian-German Cooperation: Laptev Sea system. Edited by H. Kassens et al, p.178-186, 4 refs.
Oceanography, Sea water, Optical properties, Light transmission, Transparence, Attenuation, Suspended sediments, River flow, Biomass, Chlorophylls, Marine biology, Luminescence, Sampling, Russia—Laptev Sea

50-2084
Zooplankton of the Laptev Sea coastal waters.
Petriashov, V.V., Markhaseva, E.L., Pinchuk, A.I., Stepan'iants, S.D., *Berichte zur Polarforschung*, 1995, No.176, Russian-German Cooperation: Laptev Sea system. Edited by H. Kassens et al, p.187-191, 7 refs.
Marine biology, Oceanography, Plankton, Biomass, Classifications, Distribution, Sampling, Russia—Laptev Sea

50-2085
Composition and distribution of summer zooplankton in the Laptev Sea.
Kosobokova, K., Hanssen, H., Markhaseva, E., Petriashov, V.V., Pinchuk, A.I., *Berichte zur Polarforschung*, 1995, No.176, Russian-German Cooperation: Laptev Sea system. Edited by H. Kassens et al, p.192-199, 2 refs.
Marine biology, Oceanography, Biomass, Plankton, Distribution, Classifications, Sampling, Russia—Laptev Sea

50-2086
Distribution, biomass and production of *Thysanoëssa longicaudata* Krøyer, 1846 (Crustacea, Euphausiacea) in the Arctic.
Timofeev, S.F., *Berichte zur Polarforschung*, 1995, No.176, Russian-German Cooperation: Laptev Sea system. Edited by H. Kassens et al, p.200-205, 15 refs.
Marine biology, Plankton, Biomass, Distribution, Sampling, Russia—Laptev Sea

50-2087
Benthic studies in the Laptev Sea.
Schmid, M.K., Hinz, K., *Berichte zur Polarforschung*, 1995, No.176, Russian-German Cooperation: Laptev Sea system. Edited by H. Kassens et al, p.206-210, 5 refs.
Oceanography, Ocean bottom, Marine biology, Biomass, Plankton, Distribution, Ecosystems, Sampling, Russia—Laptev Sea

50-2088
Bottom biocoenoses of the Laptev Sea and adjacent areas.
Sirenko, B.I., Petriashov, V.V., Rachor, E., Hinz, K., *Berichte zur Polarforschung*, 1995, No.176, Russian-German Cooperation: Laptev Sea system. Edited by H. Kassens et al, p.211-221, 26 refs.
Marine biology, Oceanography, Ocean bottom, Biomass, Distribution, Biogeography, Ecology, Classifications, Statistical analysis, Sampling, Russia—Laptev Sea

50-2089
Hydrobiological research in the Lena polynya.
Gukov, A.IU., *Berichte zur Polarforschung*, 1995, No.176, Russian-German Cooperation: Laptev Sea system. Edited by H. Kassens et al, p.228-229, 4 refs.
Oceanography, Polynyas, Estuaries, Marine biology, Biomass, Plankton, Sampling, Classifications, Russia—Lena River, Russia—Laptev Sea

50-2090
Trophic structure of the benthos of the Lena polynya.
Gukov, A.IU., *Berichte zur Polarforschung*, 1995, No.176, Russian-German Cooperation: Laptev Sea system. Edited by H. Kassens et al, p.230-232, 4 refs.
Marine biology, Oceanography, Polynyas, Ocean bottom, Biomass, Sampling, Classifications, Russia—Laptev Sea, Russia—Lena River

50-2091
Holocene climatic, vegetation and pollen data of Siberia adjacent to the Laptev Sea.
Naidina, O.D., *Berichte zur Polarforschung*, 1995, No.176, Russian-German Cooperation: Laptev Sea system. Edited by H. Kassens et al, p.235-253, 18 refs.
Paleoecology, Tundra terrain, Soil formation, Landscape types, Geography, Biogeography, Vegetation patterns, Palynology, Climatic changes, Russia—Siberia

50-2092
Paleogeographical studies of permafrost in the eastern Taymyr lowland.
Siegert, C., Khrutskiĭ, S.F., Dereviagin, A.IU., *Berichte zur Polarforschung*, 1995, No.176, Russian-German Cooperation: Laptev Sea system. Edited by H. Kassens et al, p.254-256, 4 refs.
Paleoecology, Pleistocene, Geocryology, Tundra terrain, Permafrost transformation, Permafrost structure, Geomorphology, Landscape development, Sampling, Russia—Taymyr Peninsula

50-2093

Studying seasonal water and solute movement in the active layer in a continuous permafrost setting—preliminary results from Siberia.

Boike, J., van Loon, W.K.P., Kopsch, C., Hubberten, H.W., *Berichte zur Polarforschung,* 1995, No.176, Russian-German Cooperation: Laptev Sea system. Edited by H. Kassens et al, p.257-264, 4 refs.

Continuous permafrost, Permafrost hydrology, Active layer, Water content, Water transport, Soil water migration, Seasonal variations, Isotope analysis, Russia—Siberia

50-2094

Natural and technogenic water and sediment supply to the Laptev Sea.

Alabian, A.M., Chalov, R.S., Korotaev, V.N., Sidorchuk, A.IU., Zaitsev, A.A., *Berichte zur Polarforschung,* 1995, No.176, Russian-German Cooperation: Laptev Sea system. Edited by H. Kassens et al, p.265-271, 5 refs.

Oceanography, River basins, Estuaries, River flow, Mining, Runoff, Sediment transport, Surface drainage, Geochemistry, Russia—Laptev Sea, Russia—Lena River

50-2095

Geochemistry of Lena River suspended load and sediments—preliminary results of the expedition in July/August 1994.

Rachold, V., *Berichte zur Polarforschung,* 1995, No.176, Russian-German Cooperation: Laptev Sea system. Edited by H. Kassens et al, p.272-279, 8 refs.

Oceanography, Estuaries, Deltas, Runoff, River flow, Sediment transport, Suspended sediments, Geochemistry, Sampling, Russia—Lena River

50-2096

Sediment reworking by ice gouging in the western Laptev Sea.

Lindemann, F., Kassens, H., Reimnitz, E., *Berichte zur Polarforschung,* 1995, No.176, Russian-German Cooperation: Laptev Sea system. Edited by H. Kassens et al, p.280-285, 3 refs.

Oceanography, Marine geology, Bottom topography, Bottom sediment, Ice scoring, Acoustic measurement, Underwater acoustics, Ice solid interface, Distribution, Russia—Laptev Sea

50-2097

Productivity proxies: organic carbon and biogenic opal in surface sediments from the Laptev Sea shelf and the adjacent continental slope.

Stein, R., Nürnberg, D., *Berichte zur Polarforschung,* 1995, No.176, Russian-German Cooperation: Laptev Sea system. Edited by H. Kassens et al, p.286-296, 30 refs.

Oceanography, Marine biology, Water chemistry, Biomass, Geochemistry, Suspended sediments, Estuaries, Sampling, Ice cover effect, Russia—Laptev Sea

50-2098

Transport and distribution of trace elements in the Laptev Sea: first results of the TRANSDRIFT Expeditions.

Hölemann, J.A., Schirmacher, M., Prange, A., *Berichte zur Polarforschung,* 1995, No.176, Russian-German Cooperation: Laptev Sea system. Edited by H. Kassens et al, p.297-302, 5 refs.

Oceanography, Suspended sediments, Distribution, Estuaries, Runoff, Geochemistry, Sampling, Russia—Laptev Sea

50-2099

Mineralogical and sedimentological characterization of surface sediments from the Laptev Sea.

Wahsner, M., *Berichte zur Polarforschung,* 1995, No.176, Russian-German Cooperation: Laptev Sea system. Edited by H. Kassens et al, p.303-313, 23 refs.

Oceanography, Geochemistry, Suspended sediments, Distribution, Sedimentation, Mineralogy, Grain size, Estuaries, Runoff, Sampling, Russia—Laptev Sea

50-2100

Sedimentary environment of the Laptev Sea: preliminary results of the TRANSDRIFT II Expedition.

Dehn, J., Kassens, H., *Berichte zur Polarforschung,* 1995, No.176, Russian-German Cooperation: Laptev Sea system. Edited by H. Kassens et al, p.314-323, 15 refs.

Oceanography, Sediment transport, Bottom sediment, Suspended sediments, Coring, Estuaries, Runoff, Sedimentation, Geochemistry, Sampling, Russia—Laptev Sea

50-2101

Some lithological-geochemical features of modern bottom sediments of the Laptev Sea shelf.

IAkovlev, A.V., *Berichte zur Polarforschung,* 1995, No.176, Russian-German Cooperation: Laptev Sea system. Edited by H. Kassens et al, p.324-333, 13 refs.

Oceanography, Bottom sediment, Sedimentation, Geochemistry, Lithology, Estuaries, Runoff, Sampling, Russia—Laptev Sea

50-2102

Study of the calcareous microfauna from Laptev Sea sediments.

Bauch, H.A., Kubisch-Popp, M., Cronin, T.M., Rossak, B., *Berichte zur Polarforschung,* 1995, No.176, Russian-German Cooperation: Laptev Sea system. Edited by H. Kassens et al, p.334-339, 14 refs.

Oceanography, Sedimentation, Estuaries, Runoff, Suspended sediments, Bottom sediment, Coring, Sampling, Biomass, Classifications, Russia—Laptev Sea

50-2103

Distribution of Fe and Mn in pore waters and sediment of the Laptev Sea—results of the expedition TRANSDRIFT I.

Langner, C., *Berichte zur Polarforschung,* 1995, No.176, Russian-German Cooperation: Laptev Sea system. Edited by H. Kassens et al, p.340-343.

Oceanography, Water chemistry, Geochemistry, Sampling, Sedimentation, Estuaries, Metals, Solubility, Distribution, Russia—Laptev Sea

50-2104

Holocene sediments of the Russian east-arctic seas.

IAshin, D.S., Kosheleva, V.A., *Berichte zur Polarforschung,* 1995, No.176, Russian-German Cooperation: Laptev Sea system. Edited by H. Kassens et al, p.344-347, 5 refs.

Oceanography, Bottom sediment, Classifications, Drill core analysis, Lithology, Geochemistry, Sampling, Russia—Laptev Sea

50-2105

Structural pattern and tectonic history of the Laptev Sea region.

Drachev, S.S., Savostin, L.A., Bruni, I.E., *Berichte zur Polarforschung,* 1995, No.176, Russian-German Cooperation: Laptev Sea system. Edited by H. Kassens et al, p.348-366, 35 refs.

Oceanography, Marine geology, Tectonics, Geologic structures, Stratigraphy, Classifications, Ocean bottom, Russia—Laptev Sea

50-2106

Marine geophysical investigations in the Laptev Sea and the western part of the East Siberian Sea.

Roeser, H.A., Block, M., Hinz, K., Richert, C., *Berichte zur Polarforschung,* 1995, No.176, Russian-German Cooperation: Laptev Sea system. Edited by H. Kassens et al, p.367-377, 11 refs.

Oceanography, Marine geology, Tectonics, Ocean bottom, Seismic surveys, Seismic reflection, Profiles, Orientation, Geologic structures, Russia—Laptev Sea

50-2107

Aim of planned geological on-shore investigations on the Novosibirian Islands within the project "Correlation of circum-arctic alpine structural events" (CASE).

Paech, H.J., *Berichte zur Polarforschung,* 1995, No.176, Russian-German Cooperation: Laptev Sea system. Edited by H. Kassens et al, p.378-382, 19 refs.

Tectonics, Marine geology, Geologic structures, Ocean bottom, Pleistocene, Russia—Laptev Sea

50-2108

Geological structure of the Laptev Shelf and adjacent parts of the Eurasian subbasin (in the context of planned drilling).

Kim, V.I., Verba, V.A., *Berichte zur Polarforschung,* 1995, No.176, Russian-German Cooperation: Laptev Sea system. Edited by H. Kassens et al, p.383-387, 7 refs.

Marine geology, Ocean bottom, Geologic structures, Tectonics, Offshore drilling, Exploration, Classifications, Russia—Laptev Sea

50-2109

Numerical modeling of heterogeneous ozone depletion in polar stratospheric clouds.

Smyshliaev, S.P., *Russian meteorology and hydrology,* 1994, No.12, p.34-40, Translated from Meteorologiia i gidrologiia. 21 refs.

Polar atmospheres, Atmospheric attenuation, Polar stratospheric clouds, Cloud physics, Aerosols, Ozone, Heterogeneous nucleation, Photochemical reactions, Mathematical models

Dynamic and chemical mechanisms of the formation of spring ozone anomalies in Antarctica are under study. A two-dimensional zonal mean photochemical model is used for numerical experiments to test various theories on the "ozone hole" formation. Model results are compared with observed regularities in the space and time ozone distribution in the polar stratosphere. The experimental results show that dynamic mechanisms fail to reproduce the observed features in the antarctic ozone distribution. The heterogeneous chlorine activation shows quantitative differences, which are minimized when the direct heterogeneous ozone depletion in polar stratospheric clouds is considered. (Auth. mod.)

50-2110

Subgrid parameterization of surface heat and momentum fluxes over polar oceans.

Vihma, T., *Journal of geophysical research,* Nov. 15, 1995, 100(C11), p.22,625-22,646, 67 refs.

Atmospheric boundary layer, Air ice water interaction, Heat loss, Heat flux, Ice cover effect, Polynyas, Marine meteorology, Wind factors, Surface temperature, Mathematical models, Simulation

In an analysis relevant to both polar regions, the parameterization of heat and momentum fluxes over a heterogeneous surface consisting of sea ice and large areas of open ocean (polynyas) has been studied. Various theories required to calculate grid-averaged fluxes are discussed, and a two-dimensional mesoscale boundary layer model has been applied to simulate the flow and heat exchange processes inside a single grid element of a hypothetical atmospheric general circulation model. The theories are compared with model results. With allowance for surface fluxes of sensible and latent heat, a mosaic method, based on the use of estimates for local surface temperature, air temperature, specific humidity, and wind speed over the ice-covered and ice-free parts of the grid square, performed well in the comparison. Parameterization of surface momentum flux seemed to be most reasonable on the basis of the surface pressure field and a geostrophic drag coefficient depending on the air-surface temperature difference. (Auth. mod.)

50-2111

Sensitivity of numerical prognoses to antarctic sea ice distribution.

Watkins, A.B., Simmonds, I., *Journal of geophysical research,* Nov. 15, 1995, 100(C11), p.22,681-22,696, 28 refs.

Marine meteorology, Atmospheric boundary layer, Air ice water interaction, Ice cover effect, Sea ice distribution, Weather forecasting, Heat transfer, Surface temperature, Synoptic meteorology, Simulation

To examine the effect of antarctic sea ice concentration upon the atmosphere on synoptic timescales, a general circulation model was used to perform a suite of 5-day forecasts. As well as using a generic July sea ice concentration, further experiments were conducted with 0, 10, 25, 50, 80, and 100% sea ice concentrations. The 100% forecast was used as the control. Results show that the central pressure, structure and tracks of individual cyclones are sensitive to the "switch on" of different sea ice conditions. Composites of all forecasts made with each concentration showed considerable and statistically significant anomalies in the surface temperatures and turbulent heat fluxes over the sea ice. The largest changes were simulated closest to the coast for all concentrations, except for the

generic July sea ice run, which displayed maxima over the outer pack. Significant westerly anomalies were also induced over the ice in all cases. These results suggest that sea ice concentration induces anomalies in the atmospheric parameters in timescales of less than 5 days. Further, use of a realistic distribution of sea ice concentration produces results distinct from the constant concentration forecasts. Hence it is suggested that real-time antarctic sea ice data may be of considerable benefit to numerical weather prediction and analysis. (Auth. mod.)

50-2112

Thickness, structure, and properties of level summer multiyear ice in the Eurasian sector of the Arctic Ocean.

Eicken, H., Lensu, M., Leppäranta, M., Tucker, W.B., Gow, A.J., Salmela, O., MP 3731, *Journal of geophysical research*, Nov. 15, 1995, 100(C11), p.22,697-22,710, 53 refs.

Sea ice distribution, Oceanography, Ice cover thickness, Ice surveys, Classifications, Ice cores, Stratigraphy, Ice microstructure, Sampling, Ice water interface, Salinity, Physical properties, Ablation, Correlation, Arctic Ocean

In Aug. and Sep. 1991, thickness, structure and properties of level multiyear ice were studied at 66 locations in the Eurasian sector of the Arctic Ocean. The mean ice thickness was 2.86 m, with 0.31 m of freeboard. On the basis of the study of ice cores, 61% of the ice cover consisted of undeformed columnar ice, the remaining 39% consisted of a mixture of ice types including frazil (18%) and deformed ice (9%). Through microstructural studies, six main classes of pores could be identified. The mean density of the ice cover increased from 720 kg/m^3 at the top to >880 kg/m^3 below 0.4 m depth. Sea ice salinities (mean value 2.1 per mill) correlate with ice thickness. On average, salinity profiles exhibit a linear increase from values close to 0 per mill at the top to 2 per mill at 1 m depth, with less steep salinity gradients below. Sampling from different depths within the ice cover indicates that the brine in summer sea ice is strongly stratified. The influence of meltwater percolation is evident, with salinities around 5 per mill and pH values <8 at the top and >15 per mill and >8 at greater depths. Pore microstructure is highly variable even on small scales. Salinity and other ice properties do not vary to a large degree between different regions. The evolution of level multiyear sea ice is discussed with particular reference to "hidden" occurrence of deformed ice and the importance of ablation processes.

50-2113

Seasonal simulation of the southern ocean coupled ice-ocean system.

Häkkinen, S., *Journal of geophysical research*, Nov. 15, 1995, 100(C11), p.22,733-22,748, 58 refs.

Oceanography, Climatology, Marine meteorology, Air ice water interaction, Sea ice distribution, Ice cover effect, Heat flux, Ocean currents, Advection, Wind factors, Models, Thermodynamics, Simulation

The southern ocean ice-ocean system is investigated using a coupled model developed at Princeton University. The ocean model uses the primitive equations and solves the second-moment closure for turbulent mixing; the snow-ice model uses a three-level thermodynamic scheme resembling Semtner's (1976) model. The focus here is to study the seasonal variability of the ice covered areas and water mass formation. The model simulates reasonably well the seasonal cycle of the ice cover in the southern ocean. The annual rapid advance of the ice extent is tied to the ice advection away from the coast toward the Antarctic Circumpolar Current (ACC), where it melts rapidly with the increase of radiative fluxes in the austral spring. The oceanic heat fluxes are up to 100 W/m^2 in open water areas and along the coastal areas except in the Weddell and Ross Seas, which are occupied by a year-round sea ice cover and have average heat flux of 20 W/m^2 or less. The Atlantic meridional heat flux is zero at 34°S (northern boundary of the model), which is an inadequancy in the model. In the Indian Ocean sector the flux is southward, while in the Pacific sector it is weak and equatorward. From the water mass balance the authors deduce that the Antarctic Bottom Water (AABW) annual production is 12 Sv in the Atlantic sector and 5 Sv in the Ross Sea. Intermediate water types are produced in the Indian Ocean sector, where some of the AABW is lost during that conversion. In the Atlantic sector, 6 Sv of the annually formed AABW is advected north across the ACC. In the Pacific sector the northward AABW flow is 7.5 Sv, which is in excess of the Ross Sea production, suggesting that a considerable portion of the AABW formed in the Weddell Sea is contributing to that flux. (Auth. mod.)

50-2114

Airborne hydrogen peroxide measurements in supercooled clouds.

Snider, J.R., Murphy, T., *Journal of geophysical research*, Nov. 20, 1995, 100(D11), p.23,039-23,050, 39 refs.

Cloud physics, Aerosols, Supercooled clouds, Chemical properties, Solubility, Scavenging, Ice vapor interface, Sampling, Turbulent diffusion, Profiles, Temperature effects

50-2115

Vertical profiles of N_2O_5 along with CH_4, N_2O, and H_2O in the late arctic winter retrieved from MIPAS-B infrared limb emission measurements.

Wetzel, G., von Clarmann, T., Oelhaf, H., Fischer, H., *Journal of geophysical research*, Nov. 20, 1995, 100(D11), p.23,173-23,181, 51 refs.

Polar atmospheres, Stratosphere, Subsidence, Aerosols, Cloud physics, Heterogeneous nucleation, Chemical properties, Infrared spectroscopy, Sounding, Profiles, Spectra

50-2116

On the polar stratospheric cloud formation potential of the northern stratosphere.

Pawson, S., Naujokat, B., Labitzke, K., *Journal of geophysical research*, Nov. 20, 1995, 100(D11), p.23,215-23,225, 24 refs.

Stratosphere, Climatology, Cloud physics, Polar stratospheric clouds, Air temperature, Freezing points, Ice formation, Seasonal variations, Temperature effects

50-2117

Experimental closure of the heat and mass transfer theory of spheroidal hailstones.

Greenan, B.J.W., List, R., *Journal of the atmospheric sciences*, Nov. 1, 1995, 52(21), p.3797-3815, 39 refs.

Precipitation (meteorology), Cloud physics, Hailstone growth, Hailstone structure, Surface temperature, Supercooled clouds, Mass transfer, Heat transfer, Ice water interface, Theories, Wind tunnels, Simulation, Mathematical models

50-2118

Thermoluminescence dating of late Pleistocene loess and tephra from eastern Washington and southern Oregon and implications for the eruptive history of Mount St. Helens.

Berger, G.W., Busacca, A.J., *Journal of geophysical research*, Nov. 10, 1995, 11(B11), p.22,361-22,374, 63 refs.

Pleistocene, Geochronology, Quaternary deposits, Loess, Volcanic ash, Soil dating, Age determination, Luminescence, Correlation, Accuracy, United States—Washington—Saint Helens, Mount

50-2119

Failure of columnar saline ice under biaxial compression: failure envelopes and the brittle-to-ductile transition.

Schulson, E.M., Nickolayev, O.Y., *Journal of geophysical research*, Nov. 10, 1995, 11(B11), p.22,383-22,400, 45 refs.

Sea ice, Ice mechanics, Ice microstructure, Ice strength, Compressive properties, Cracking (fracturing), Brittleness, Ice solid interface, Stress strain diagrams, Stress concentration, Ice plasticity

50-2120

Low brightness temperatures of Martian polar caps: CO_2 clouds or low surface emissivity?

Forget, F., Hansen, G.B., Pollack, J.B., *Journal of geophysical research*, Oct. 25, 1995, 100(E10), p.21,219-21,234, 41 refs.

Mars (planet), Climatology, Polar regions, Extraterrestrial ice, Frost, Ground ice, Carbon dioxide, Brightness, Atmospheric composition, Cloud physics, Infrared spectroscopy, Spectra, Snow optics

50-2121

Photochemistry of Triton's atmosphere and ionosphere.

Krasnopolsky, V.A., Cruikshank, D.P., *Journal of geophysical research*, Oct. 25, 1995, 100(E10), p.21,271-21,286, 83 refs.

Extraterrestrial ice, Satellites (natural), Atmospheric composition, Cloud physics, Photochemical reactions, Radiation absorption, Ground ice, Ice sublimation

50-2122

Land application turns wastewater into ice cubes.

Madison, M., Henderson, M., *Water environment & technology*, Dec. 1994, 6(12), p.33-34.

Water treatment, Irrigation, Waste disposal, Agriculture, Ice formation, Artificial snow, Ice melting, Seepage

50-2123

Balancing safety and the environment.

Mericas, D., Wagoner, B., *Water environment & technology*, Dec. 1994, 6(12), p.38-43.

Airports, Aircraft icing, Ice removal, Chemical ice prevention, Solutions, Runoff, Water treatment, Environmental impact, Environmental protection, Standards, Countermeasures

50-2124

Performance of lagoons experiencing seasonal ice cover.

Price, D.S., Smith, D.W., Stanley, S.J., *Water environment research*, May-June 1995, 67(3), p.318-326, 6 refs.

Water treatment, Waste treatment, Sewage treatment, Aeration, Ponds, Cold weather performance, Design, Ice cover effect, Snow cover effect, Ice water interface, Microbiology, Water chemistry

50-2125

Chemical correlates of Hg and methyl-Hg in northern Wisconsin lake waters under ice-cover.

Watras, C.J., Morrison, K.A., Bloom, N.S., *Water, air, and soil pollution*, Oct. 1995, 84(3-4), p.253-267, 21 refs.

Limnology, Lake water, Surface waters, Icebound lakes, Lake ice, Ice cover effect, Geochemistry, Water pollution, Metals, Solubility, Sampling, Environmental tests

50-2126

Elemental concentrations in fresh snowfall across a regional transect in the northeastern U.S.: apparent sources and contribution to acidity.

Baisden, W.T., Blum, J.D., Miller, E.K., Friedland, A.J., *Water, air, and soil pollution*, Oct. 1995, 84(3-4), p.269-286, 46 refs.

Air pollution, Aerosols, Snowstorms, Snow impurities, Sampling, Chemical properties, Environmental tests, Snow air interface, Ion density (concentration), Correlation, Origin

50-2127

Monitoring xenon clathrate hydrate formation on ice surfaces with optically enhanced ^{129}Xe NMR.

Pietrass, T., Gaede, H.C., Bifone, A., Pines, A., Ripmeester, J.A., *American Chemical Society. Journal*, July 19, 1995, 117(28), p.7520-7525, 33 refs.

Gases, Hydrates, Clathrates, Ice physics, Nuclear magnetic resonance, Ice spectroscopy, Spectra, Ice vapor interface, Adsorption, Molecular structure, Latticed structures, Molecular energy levels, Temperature effects

50-2128

Groundwater flow beneath ice sheets: part I—large scale patterns.

Boulton, G.S., Caban, P.E., van Gijssel, K., *Quaternary science reviews*, July 1995, 14(6), p.545-562, 30 refs.

Glacial hydrology, Pleistocene, Hydrogeology, Ice sheets, Glacier oscillation, Ice melting, Meltwater, Ground water, Water flow, Subglacial drainage, Glacier beds, Ice solid interface

50-2129

Groundwater flow beneath ice sheets: part II—its impact on glacier tectonic structures and moraine formation.

Boulton, G.S., Caban, P., *Quaternary science reviews*, July 1995, 14(6), p.563-587, 43 refs.

Glacial geology, Pleistocene, Permafrost hydrology, Ground water, Subglacial drainage, Water pressure, Sediment transport, Glacier beds, Tectonics, Moraines, Ice loads, Ice cover effect, Ice solid interface, Stress concentration, Geologic processes

50-2130

Glacial flow systems in the zone of confluence between the Scandinavian and Novaya Zemlya ice sheets.

Punkari, M., *Quaternary science reviews*, July 1995, 14(6), p.589-603, 50 refs.

Pleistocene, Glacial geology, Glacier flow, Glacier oscillation, Ice sheets, Landforms, Geomorphology, Glacial erosion, Spaceborne photography, Geochronology, Norway, Russia—Novaya Zemlya

50-2131

Paleoenvironments of the Canadian high arctic derived from pollen and plant macrofossils: problems and potentials.

Gajewski, K., Garneau, M., Bourgeois, J.C., *Quaternary science reviews,* July 1995, 14(6), p.609-629, 119 refs.

Paleoecology, Paleobotany, Arctic landscapes, Quaternary deposits, Peat, Fossils, Palynology, Ice cores, Ice dating, Sampling, Radioactive age determination, Canada—Northwest Territories—Ellesmere Island

50-2132

Radiation frost susceptibility and the association between sky exposure and leaf size.

Jordan, D.N., Smith, W.K., *Oecologia,* July 1995, 103(1), p.43-48, 28 refs.

Plant physiology, Frost, Frost resistance, Radiant cooling, Plant tissues, Infrared radiation, Light effects, Microclimatology, Altitude

50-2133

Alteration of volatile inventories by polar clathrate formation on Mars.

Musselwhite, D., Linine, J.I., *Journal of geophysical research,* Nov. 25, 1995, 100(E11), p.23,301-23,306, 17 refs.

Mars (planet), Extraterrestrial ice, Ice sheets, Clathrates, Hydrates, Geochemistry, Atmospheric composition, Gases, Carbon dioxide, Ice vapor interface, Ice volume, Models

50-2134

Dispersion-force effects in interfacial premelting of ice.

Wilen, L.A., Wettlaufer, J.S., Elbaum, M., Schick, M., *Physical review B,* Oct. 15, 1995, 52(16)II, p.12,426-12,433, 46 refs.

Ice physics, Ice melting, Ice water interface, Ice solid interface, Ice dielectrics, Substrates, Water films, Phase transformations, Thermodynamic properties, Surface energy, Analysis (mathematics)

50-2135

Proceedings.

Seminar on the Prediction of Frost Heave, Nottingham, England, Apr. 9, 1981, Jones, R.H., ed, University of Nottingham, 79p., Refs passim. For individual papers see 50-2136 through 50-2145.

Road maintenance, Pavement bases, Soil tests, Frost action, Frost heave, Frost forecasting, Frost penetration, Damage, Frozen ground mechanics, Mechanical tests, Ice water interface, Soil water migration, Unfrozen water content, Mathematical models

50-2136

Prediction of frost heave.

Jones, R.H., Seminar on the Prediction of Frost Heave, Nottingham, England, Apr. 9, 1981. Proceedings. Edited by R.H Jones, University of Nottingham, p.1-6, 14 refs.

Frozen ground mechanics, Frost heave, Frost forecasting, Shaft sinking, Tunnels, Artificial freezing, Settlement (structural), Water table

50-2137

Brief review of physical and mathematical models of frost heave.

Holden, J.T., Seminar on the Prediction of Frost Heave, Nottingham, England, Apr. 9, 1981. Proceedings. Edited by R.H Jones, University of Nottingham, p.7-13, 15 refs.

Frozen ground mechanics, Frost heave, Mathematical models, Phase transformations, Ice lenses, Water pressure, Ice water interface

50-2138

Physics, mathematics and technology of ice segregation.

Arakawa, K., Seminar on the Prediction of Frost Heave, Nottingham, England, Apr. 9, 1981. Proceedings. Edited by R.H Jones, University of Nottingham, p.15-16, 5 refs.

Frozen ground mechanics, Frost heave, Soil freezing, Ice growth, Ice lenses, Classifications

50-2139

Prediction of frost heave of roads—a simple empirical model.

Sætersdal, R., Seminar on the Prediction of Frost Heave, Nottingham, England, Apr. 9, 1981. Proceedings. Edited by R.H Jones, University of Nottingham, p.17-22, 11 refs.

Frozen ground mechanics, Frost heave, Soil freezing, Roads, Frost forecasting, Ice formation, Ice lenses, Ice water interface, Water pressure, Mathematical models

50-2140

Frost heave prediction in the Netherlands.

Post, H.J., Seminar on the Prediction of Frost Heave, Nottingham, England, Apr. 9, 1981. Proceedings. Edited by R.H Jones, University of Nottingham, p.23-28.

Road maintenance, Winter maintenance, Soil freezing, Frost heave, Frost forecasting, Soil tests, Soil physics, Frozen ground mechanics, Frost resistance

50-2141

Probabilistic approach to determining frost heave.

Chamberlain, E.J., Guymon, G.L., Berg, R.L., MP 3730, Seminar on the Prediction of Frost Heave, Nottingham, England, Apr. 9, 1981. Proceedings. Edited by R.H Jones, University of Nottingham, p.29-50, 7 refs.

Frozen ground mechanics, Road maintenance, Frost heave, Mathematical models, Frost forecasting, Unfrozen water content, Ice water interface, Moisture transfer, Soil water migration

A deterministic model of frost heave is coupled with a probabilistic model of parameter variation to predict frost heave. The model is particularly sensitive to variations in hydraulic parameters, the coefficient of variation of unfrozen hydraulic conductivity primarily determining the coefficient of variation of simulated frost heave. A probabilistic approach to determining differential frost heave is also presented. This method relies on knowing the natural variation in input soil parameters beneath a test road. The distribution of percent of soil particles finer than 0.02 mm is identified as a possible key to the distribution of the other soil parameters necessary for the model calculations. Upon completion of moisture characteristic and hydraulic conductivity tests. calculated differential heaves will be compared with observed values.

50-2142

Heaving pressures as a means of assessing frost susceptibility.

Kettle, R.J., McCabe, E., Seminar on the Prediction of Frost Heave, Nottingham, England, Apr. 9, 1981. Proceedings. Edited by R.H Jones, University of Nottingham, p.51-58, 17 refs.

Road maintenance, Frost heave, Frost action, Soil freezing, Soil pressure, Soil tests, Mechanical tests, Loading, Accuracy

50-2143

Sources of variability in a constant boundary temperature frost heave test.

Lomas, K.J., Seminar on the Prediction of Frost Heave, Nottingham, England, Apr. 9, 1981. Proceedings. Edited by R.H Jones, University of Nottingham, p.59-66, 6 refs.

Frozen ground mechanics, Soil tests, Soil freezing, Frost action, Frost heave, Mechanical tests, Soil compaction, Physical properties, Classifications, Cold chambers, Accuracy

50-2144

Estimation of unsaturated permeability from suction curves.

Thompson, J.D., Seminar on the Prediction of Frost Heave, Nottingham, England, Apr. 9, 1981. Proceedings. Edited by R.H Jones, University of Nottingham, p.67-69.

Frozen ground mechanics, Frost heave, Permeability, Porosity, Hydraulics, Mathematical models, Soil water migration

50-2145

Frost heave studies by natural freezing.

Stenberg, L., Seminar on the Prediction of Frost Heave, Nottingham, England, Apr. 9, 1981. Proceedings. Edited by R.H Jones, University of Nottingham, p.71-79, 2 refs.

Road maintenance, Frost action, Frost heave, Frozen ground mechanics, Soil tests, Soil freezing, Mechanical tests, Frost penetration, Freezing indexes

50-2146

Mesomorphic soil formation in the cryogenic taiga semihumid sector of central Siberia.

Ershov, IU.I., *Eurasian soil science,* Aug. 1995, 27(8), p.7-18, Translated from Pochvovedenie. 13 refs.

Geocryology, Taiga, Soil profiles, Soil formation, Soil classification, Sampling, Cryogenic structures, Ecology, Mineralogy, Physical properties, Russia—Siberia

50-2147

Evolution of Late Pleistocene catenas of the central Russian upland in a full glaciation-interglacial climate cycle.

Sycheva, S.A., *Eurasian soil science,* Aug. 1995, 27(8), p.34-51, Translated from Pochvovedenie. 37 refs.

Soil formation, Soil science, Landscape development, Pleistocene, Glaciation, Lithology, Soil classification, Periglacial processes, Quarries, Stratigraphy, Russia

50-2148

Loss of organic matter and minerals by soils of the central and southern Russian plain as a result of snowmelt.

Chernyshev, E.V., Ivanov, N.B., *Eurasian soil science,* Aug. 1995, 27(8), p.104-119, Translated from Pochvovedenie. 25 refs.

Soil chemistry, Organic soils, Snowmelt, Meltwater, Runoff, Hydrogeology, Soil erosion, Degradation, Agriculture, Nutrient cycle

50-2149

Zooplankton of high elevation lakes of the Sierra Nevada, California: potential effects of chronic and episodic acidification.

Engle, D., Melack, J.M., *Archiv für Hydrobiologie,* 1995, 133(1), p.1-21, 41 refs.

Limnology, Watersheds, Environmental tests, Ecosystems, Sampling, Plankton, Biomass, Water chemistry, Chemical properties, Snowmelt, Meltwater, Runoff, Air pollution, Seasonal variations, United States—California—Sierra Nevada

50-2150

Detection of polar stratospheric clouds with ERS-2/GOME data.

Meerkoetter, R., *Annales geophysicae,* Apr. 1995, 13(4), p.395-405, 33 refs.

Climatology, Remote sensing, Spacecraft, Cloud cover, Optical properties, Polar stratospheric clouds, Detection, Radiance, Spectra, Light scattering, Correlation, Simulation

50-2151

O_3 and NO_2 fluxes over snow measured by eddy correlation.

Stocker, D.W., Zeller, K.F., Stedman, D.H., *Atmospheric environment,* June 1995, 29(11), p.1299-1305, 26 refs.

Atmospheric boundary layer, Atmospheric composition, Ozone, Air pollution, Fallout, Snow air interface, Snow cover effect, Aerosols, Turbulent diffusion, Wind factors, Diurnal variations, Luminescence, Sampling

50-2152

Winter surface energy budget in Denver, Colorado.

Ruffieux, D., *Atmospheric environment,* July 1995, 29(13), p.1579-1587, 18 refs.

Climatology, Surface energy, Winter, Atmospheric boundary layer, Heat flux, Radiation balance, Snow cover effect, Thermal diffusion, Simulation, Thermal analysis, United States—Colorado—Denver

50-2153

Ejection velocity of ice impact fragments.

Arakawa, M., Maeno, N., Higa, M., Iijima, Y.I., Kato, M., *Icarus,* Dec. 1995, 118(2), p.341-354, 30 refs.

Extraterrestrial ice, Simulation, Impact tests, Ice mechanics, Geologic processes, Ice solid interface, Stress concentration, Particles, Cracking (fracturing), Decomposition, Velocity measurement, Mass transfer

50-2154

First observational evidence for condensation of Io's SO_2 atmosphere on the nightside.

Buratti, B.J., Mosher, J.A., Terrile, R.J., *Icarus*, Dec. 1995, 118(2), p.418-422, 31 refs.

Extraterrestrial ice, Satellites (natural), Regolith, Atmospheric composition, Frost, Ice detection, Condensation, Aerosols, Gases, Photometry, Photointerpretation, Spectra

50-2155

Recent retreat of ice shelves on the Antarctic Peninsula.

Vaughn, D., Lachlan-Cope, T., *Weather*, Nov. 1995, 50(11), p.374-376, 6 refs.

Sea ice distribution, Ice shelves, Ice breakup, Calving, Climatic factors, Global warming, Spaceborne photography, Antarctica—Larsen Ice Shelf

Satellite photography reveals the recent rapid deterioration of the Larsen Ice Shelf on the Antarctic Peninsula. This retreat is attributed to climatic warming, but cannot be positively derived from global climatological parameters.

50-2156

Thermodynamic analysis of the influence of electric fields on frost formation.

Ma, H.B., Peterson, G.P., *Journal of thermophysics and heat transfer*, July-Sep. 1995, 9(3), p.562-564, 7 refs.

Ice physics, Ice dielectrics, Ice needles, Frost, Ice crystal growth, Phase transformations, Ice sublimation, Dendritic ice, Electric fields, Ice vapor interface, Vapor pressure, Supersaturation

50-2157

Ductile-to-brittle transition and ductile failure envelopes of orthotropic ice under biaxial compression.

Schulson, E.M., Buck, S.E., *Acta metallurgica et materialia*, Oct. 1995, 43(10), p.3661-3668, 19 refs.

Ice physics, Ice mechanics, Ice strength, Phase transformations, Crack propagation, Ice plasticity, Compressive properties, Ice solid interface, Loads (forces), Strain tests, Stress strain diagrams

50-2158

Initial phase of postfire forest regeneration in two lichen woodlands of northern Québec.

Sirois, L., *Ecoscience*, 1995, 2(2), p.177-183, With French summary. 41 refs.

Subarctic landscapes, Trees (plants), Forest ecosystems, Forest soils, Plant ecology, Lichens, Forest fires, Revegetation, Dispersions, Canada—Quebec

50-2159

Spruce succession, disturbance, and geomorphology on the Tanana River floodplain, Alaska.

Mann, D.H., Fastie, C.L., Rowland, E.L., Bigelow, N.H., *Ecoscience*, 1995, 2(2), p.184-199, 87 refs.

Taiga, Geomorphology, Biogeography, Subarctic landscapes, Floodplains, Active layer, Sampling, Forest ecosystems, Trees (plants), Plant ecology, Vegetation patterns, Revegetation, United States—Alaska—Tanana River

50-2160

Low-energy (5-120 eV) electron-stimulated dissociation of amorphous D_2O ice: $D(^2S)$, $O(^3P_{2,1,0})$, and $O(^1D_2)$ yields and velocity distributions.

Kimmel, G.A., Orlando, T.M., *Physical review letters*, Sep. 25, 1995, 75(13), p.2606-2609, 24 refs.

Ice physics, Amorphous ice, Deuterium oxide ice, Ice erosion, Photochemical reactions, Ice spectroscopy, Ionization, Molecular energy levels, Ice electrical properties

50-2161

Fluorescence spectra and lifetime of 2-naphthol in H_2O- and D_2O-ice(I_h) single crystal.

Ping, Q., Okazaki, K., Akiyama, T., Abe, K., Shigenari, T., *Solid state communications*, July 1995, 95(3), p.177-180, 22 refs.

Ice physics, Ice crystal structure, Molecular structure, Doped ice, Deuterium oxide ice, Isotope analysis, Lasers, Ultraviolet radiation, Photochemical reactions, Ice spectroscopy, Spectra, Proton transport, Ice crystal structure

50-2162

Problem of primary frost heave with frost penetration.

Ding, Z.Z., *Mathematical methods in the applied sciences*, Sep. 25, 1995, 18(12), p.995-1011, 13 refs.

Frozen ground expansion, Frost heave, Soil freezing, Frost penetration, Boundary value problems, Freezing front, Stefan problem, Mathematical models

50-2163

Some effects of threshold singularities on a dynamical system with intermittent contact and breakage.

Darr, D.G., Troesch, A.W., Levi, R., *Journal of sound and vibration*, Aug. 31, 1995, 185(4), p.609-625, 22 refs.

Sea ice, Offshore structures, Ice solid interface, Impact, Ice models, Ice mechanics, Ice breaking, Fracture zones, Oscillations, Stability, Boundary value problems, Mathematical models, Simulation

50-2164

Three Late Quaternary pollen diagrams from Southern Patagonia and their palaeoecological implications.

Heusser, C.J., *Palaeogeography, palaeoclimatology, palaeoecology*, Oct. 1995, 118(1-2), p.1-24, 80 refs.

Paleoclimatology, Paleoecology, Quaternary deposits, Palynology, Fossils, Stratigraphy, Vegetation patterns, Geochronology, Chile—Patagonia

50-2165

Late Quaternary environmental history of Bátorliget, N.E. Hungary.

Willis, K.J., Sümegi, P., Braun, M., Tóth, A., *Palaeogeography, palaeoclimatology, palaeoecology*, Oct. 1995, 118(1-2), p.25-47, 81 refs.

Paleoclimatology, Paleoecology, Paleobotany, Quaternary deposits, Sedimentation, Vegetation patterns, Palynology, Marine deposits, Stratigraphy, Radioactive age determination, Geochemistry, Hungary

50-2166

Thermoluminescence ages of loess and associated sediments in central Nebraska, USA.

Pye, K., Winspear, N.R., Zhou, L.P., *Palaeogeography, palaeoclimatology, palaeoecology*, Oct. 1995, 118(1-2), p.73-87, 48 refs.

Pleistocene, Loess, Sedimentation, Stratigraphy, Quaternary deposits, Outwash, Soil dating, Soil analysis, Soil formation, Luminescence, Paleoclimatology, Geochronology, Correlation, United States—Nebraska

50-2167

Frost-shattered debris facies of Younger Dryas age in the coastal sedimentary successions in western Norway: palaeoenvironmental implications.

Blikra, L.H., Longva, O., *Palaeogeography, palaeoclimatology, palaeoecology*, Oct. 1995, 118(1-2), p.89-110, 51 refs.

Pleistocene, Paleoecology, Paleoclimatology, Quaternary deposits, Periglacial processes, Frost shattering, Gravel, Beaches, Littoral zone, Geomorphology, Shoreline modification, Norway

50-2168

Cement and lime for deep stabilization of soil. A chemical-physical study of stabilization effects. [Cement och kalk för djupstabilisering av jord. En kemisk-fysikalisk studie av stabiliseringseffekter]

Åhnberg, H., Johansson, S.E., Retelius, A., Ljungkrantz, C., Holmqvist, L., Holm, G., *Sweden. Statens Geotekniska Institut. Rapport*, Aug. 1995, No.48, 213p., In Swedish with English summary. 44 refs.

Soil stabilization, Soil strength, Soil compaction, Soil texture, Soil physics, Soil cement, Clay soils, Cement admixtures, Design, Chemical properties, Shear strength, Permeability

50-2169

Water resources data for Alaska, water year 1994.

Bigelow, B.B., Bailey, B.J., Hiner, M.M., Schellekens, M.F., Linn, K.R., *U.S. Geological Survey. Water-data report*, Mar. 1995, AK-94-1, 289p., PB95-242228, Refs. p.34-37.

Water supply, Hydrology, Surface waters, Surface drainage, Stream flow, Ground water, Well logging, Lakes, Water level, Flow measurement, Hydrography, Seasonal variations, United States—Alaska

50-2170

Illustrated Hokkaido forestry—towards well-developed forests. [Zusetsu Hokkaido no ringyo—susumerarete kita mori zukuri], Sapporo, Hokkaido kokudo ryokka suishin iinkai (Hokkaido Land Development and Afforestation Commission), 1990, 112p., In Japanese. Under the supervision of the Hokkaido Forestry Service (Hokkaido rinmubu).

DLC SD226.H6Z87 1990 Orien Japan

Forestry, Forest land, Land development, Land reclamation, Revegetation, Regional planning, Economic development, Cost analysis, Japan—Hokkaido

50-2171

Economic geography of the Inner Mongolia Autonomous Region. [Nei Menggu zizhiqu jingji dili]

Gang, G.E., ed, Mao, Z.H., ed, Wang, M.Z., ed, Luo, Z.Y., ed, Sun, D.F., ed, Beijing, Xinhua Publishing House, 1992, 291p., In Chinese. 15 refs.

DLC HC428.I58N453 1992 Orien China

Regional planning, Economic development, Land development, Natural resources, China—Inner Mongolia

50-2172

Climate of Inner Mongolia. [Nei Menggu qihou]

Wang, W.H., ed, Beijing, Qixiang chubanshe (Meteorology Press), 1990, 273p., In Chinese. Refs. passim.

DLC QC990.C6I553 1990 Orien China

Steppes, Deserts, Climatic factors, Air temperature, Precipitation (meteorology), Humidity, Frost forecasting, Atmospheric circulation, Meteorological data, Climatic changes, China—Inner Mongolia

50-2173

Climate of the Qinghai-Xizang Plateau. [Qingzang gaoyuan qihou]

Dai, J.X., ed, Beijing, Qixiang chubanshe (Meteorology Press), 1990, 356p., In Chinese. Refs. passim.

DLC QC990.C6T52 1990 Orien China

Mountains, Climatic factors, Atmospheric circulation, Atmospheric pressure, Atmospheric disturbances, Air temperature, Precipitation (meteorology), Humidity, Clouds (meteorology), Meteorological data, China—Qinghai-Xizang Plateau

50-2174

Climate of Xinjiang. [Xinjiang qihou]

Li, J.F., ed, Beijing, Qixiang chubanshe (Meteorology Press), 1991, 302p., In Chinese. Refs. passim.

DLC QC990.C6S594 1991 Orien China

Deserts, Climatic factors, Air temperature, Precipitation (meteorology), Humidity, Frost forecasting, Atmospheric circulation, Atmospheric disturbances, Climatic changes, Meteorological data, China—Xinjiang

50-2175

Study on some problems of cold waves in Xinjiang. [Xinjiang hanchao ruogan wenti yanjiu]

Xu, J.Q., Cui, Y.K., Shan, X.R., Urumqi, Xinjiang renmin chubanshe (Xinjiang People's Publishing House), 1985, 408p., In Chinese. 35 refs.

DLC QC990.C6S584 1985 Orien China

Frost forecasting, Air temperature, Fronts (meteorology), Atmospheric disturbances, Weather forecasting, Meteorological data, Meteorological charts, Statistical analysis, China—Xinjiang

50-2176

Great Qinghai-Xizang ice sheet. [Qingzang da binggai]

Han, T.L., Zhonghua renmin gongheguo Dizhi kuangchanbu dizhi zhuanbao (China. Ministry of Geology and Mineral Resources. Geological memoirs), Series 2, No.13, Beijing, Dizhi chubanshe (Geological Publishing House), 1991, 109p. + plates, In Chinese with English title page on outside back cover. 60 refs.
DLC QC981.8.I23H36 1991

Geological surveys, Alpine glaciation, Glacial geology, Glacial erosion, Glacial deposits, Moraines, Glacial till, Quaternary deposits, Tectonics, Stratigraphy, Geochronology, Paleoclimatology, China—Qinghai-Xizang Plateau

50-2177

Oil and gas fields of Qinghai and Xizang. [Qingzang youqiqu]

Gu, S.S., ed, Zhongguo shiyou dizhizhi (Petroleum geology of China series), Vol.14, Beijing, Shiyou gongye chubanshe (Petroleum Industry Publishing House), 1990, 483p., In Chinese with English preface and table of contents. Refs. p.325-327,482-483.
DLC TN876.C52T753 1990 Orien China

Geological surveys, Exploration, Crude oil, Natural gas, Natural resources, Petroleum industry, Economic development, China—Qinghai-Xizang Plateau

50-2178

Study on some kinds of weather systems over and around the Qinghai-Xizang (Tibet) Plateau. [Qingzang gaoyuan ji qi linjin diqu jilei tianqi xitong de yanjiu]

Luo, S.W., et al, Beijing, Qixiang chubanshe (Meteorology Press), 1992, 205p., In Chinese with English summary and table of contents. 86 refs.
DLC QC990.C62P583 1992 Orien China

Mountains, Synoptic meteorology, Atmospheric circulation, Atmospheric disturbances, Atmospheric pressure. Heat flux, Heat balance, Frost forecasting, Statistical analysis, China—Qinghai-Xizang Plateau

50-2179

Advances in Qinghai-Xizang Plateau meteorology. The Qinghai-Xizang Plateau Meteorological Experiment (1979) and Research. [Qingzang gaoyuan qixiangxue jinzhan. Qinghai gaoyuan qixiang kexue shiyan (1979) he yanjiu]

Zhang, J.J., et al, Beijing, Kexue chubanshe (Science Press), 1988, 268p., In Chinese with English summary and table of contents. Refs. passim.
DLC QC990.C6T53 1988 Orien China

Mountains, Weather observations, Weather stations, Synoptic meteorology, Atmospheric circulation, Heat balance, Weather forecasting, Mathematical models, China—Qinghai-Xizang Plateau

50-2180

XX Polar Symposium. Man impact on polar environment.

Polar Symposium, 20th, Lublin, Poland, June 3-5, 1993, Repelewska-Pękalowa, J., ed, Pękala, K., ed, Lublin, Poland, Marie Curie-Skłodowska University, 1993, 496p., Most with Polish summaries. Refs. passim. For selected papers see 50-2181 through 50-2218 or B-54135 through B-54143, E-54144, E-54146 and I-54145.

Environmental impact, Environmental protection, Geomorphology, Glacial geology

This is a collection of papers presented at the 20th Polar Symposium held in Lublin, Poland, June 3-5, 1993. Twelve of the papers are pertinent to Antarctica and deal with environmental and legal issues, as well as biological, meteorological and geological investigations on the continent and the antarctic ocean.

50-2181

Changes in the antarctic environment under the impact of anthropopression and the legal means to counteract them.

Machowski, J., Polar Symposium, 20th, Lublin, Poland, June 3-5, 1993. Man impact on polar environment. Edited by J. Repelewska-Pękalowa and K. Pękala, Lublin, Poland, Marie Curie-Skłodowska University, 1993, p.11-16, With Polish summary.

Environmental impact, Environmental protection, Countermeasures, International cooperation, Legislation, Antarctica

Threats to the antarctic environment, and legislation aimed to protect it, are reviewed. Recommendations of the Antarctic Treaty Consultative Parties at various conventions over the years, and agreements such as the 1991 Protocol on Environmental Protection to the Antarctic Treaty, are examined in detail.

50-2182

Long-term variability of the atmospheric circulation over Spitsbergen and its influence on the air temperature.

Niedźwiedź, T., Polar Symposium, 20th, Lublin, Poland, June 3-5, 1993. Man impact on polar environment. Edited by J. Repelewska-Pękalowa and K. Pękala, Lublin, Poland, Marie Curie-Skłodowska University, 1993, p.17-30, With Polish summary. 36 refs.

Atmospheric circulation, Air temperature, Polar atmospheres, Atmospheric disturbances, Statistical analysis, Norway—Spitsbergen

50-2183

Centennial of the Norwegian Polar expedition on board of the IFramR, 1893-1896.

Matalewski, S.M., Polar Symposium, 20th, Lublin, Poland, June 3-5, 1993. Man impact on polar environment. Edited by J. Repelewska-Pękalowa and K. Pękala, Lublin, Poland, Marie Curie-Skłodowska University, 1993, p.95-102, With Polish summary. 6 refs.

Expeditions, Ships, History

50-2184

Cyclopoida of the Bransfield Strait (Antarctica, October-November 1986).

Bielecka, L., Polar Symposium, 20th, Lublin, Poland, June 3-5, 1993. Man impact on polar environment. Edited by J. Repelewska-Pękalowa and K. Pękala, Lublin, Poland, Marie Curie-Skłodowska University, 1993, p.125-131, With Polish summary. 9 refs.

Plankton, Marine biology, Antarctica—Bransfield Strait

This paper is based on planktonic material collected between Oct.-Nov. 1986 in the Bransfield Strait. The predominant cyclopoid species were *Oithona similis* and *Oncaea curvata*. The genus *Oncaea* was concentrated in a deeper part of the studied water column than the genus *Oithona*. The distribution of Cyclopoida was influenced by hydrological conditions. (Auth.)

50-2185

Distribution of vascular plants in Sørkapp Land (Spitsbergen).

Dubiel, E., Polar Symposium, 20th, Lublin, Poland, June 3-5, 1993. Man impact on polar environment. Edited by J. Repelewska-Pękalowa and K. Pękala, Lublin, Poland, Marie Curie-Skłodowska University, 1993, p.135-139, With Polish summary. 10 refs.

Plants (botany), Site surveys, Tundra vegetation, Norway—Spitsbergen

50-2186

Natural and man induced variations in krill biomass (Western Antarctic, 1981-1989).

Godlewska, M., Polar Symposium, 20th, Lublin, Poland, June 3-5, 1993. Man impact on polar environment. Edited by J. Repelewska-Pękalowa and K. Pękala, Lublin, Poland, Marie Curie-Skłodowska University, 1993, p.159-168, With Polish summary. 30 refs.

Biomass, Marine biology, Environmental impact, Antarctica—West Antarctica

Hydroacoustic data collected on board the *Profesor Siedlecki* during 4 Polish expeditions to West Antarctica were analyzed to determine krill biomass variability. High krill concentrations were found in Bransfield Strait and around the South Orkney Is.; the lowest concentrations were recorded in the open waters of the Drake Passage. Figures and tables presented show significant krill biomass fluctuation both in space and time.

50-2187

Antagonism of bacteria isolated from the soils of Western Spitsbergen, Bellsund region.

Jóźwik, Z., Polar Symposium, 20th, Lublin, Poland, June 3-5, 1993. Man impact on polar environment. Edited by J. Repelewska-Pękalowa and K. Pękala, Lublin, Poland, Marie Curie-Skłodowska University, 1993, p.177-180, With Polish summary. 5 refs.

Bacteria, Soil analysis, Soil chemistry, Soil microbiology, Norway—Spitsbergen

50-2188

VII. Contents of Cu, Mn, Zn, Pb and Cd in plants and soil on Western Spitsbergen—Bellsund region.

Jóźwik, Z., Magierski, J., Polar Symposium, 20th, Lublin, Poland, June 3-5, 1993. Man impact on polar environment. Edited by J. Repelewska-Pękalowa and K. Pękala, Lublin, Poland, Marie Curie-Skłodowska University, 1993, p.181-197, With Polish summary. 4 refs.

Chemical analysis, Soil chemistry, Plants (botany), Plant physiology, Metals, Microelement content, Norway—Spitsbergen

50-2189

Human impact around polar stations on Fildes Peninsula (King George Island, Antarctica).

Krzyszowska, A., Polar Symposium, 20th, Lublin, Poland, June 3-5, 1993. Man impact on polar environment. Edited by J. Repelewska-Pękalowa and K. Pękala, Lublin, Poland, Marie Curie-Skłodowska University, 1993, p.203-208, With Polish summary.

Environmental impact, Tundra terrain, Pollution, Oil spills, Antarctica—Fildes Peninsula

The tundra environment is very susceptible to disturbance and damage caused by human activity due to its low rate of production, slow decomposition, dry climatic conditions, and sparse vegetation. This environment is sensitive to chemical contamination, oil spills, and mechanical destruction. All these pollutants result from activities of human settlements (e.g. polar stations and tourist activities). The present study was designed to assess the effects of four polar stations on their immediate environment on Fildes Peninsula in Mar. 1991. The main visible sources of chemical contamination were identified as fuel spills from tanks, barrels, and pipes; fuel leaks from pumps and power stations; discharge of domestic sewage and dumping of solid waste.

50-2190

Anthropogenic factors in the dynamics of shelf and the Barents Sea coastal ecosystems.

Matishov, G.G., Pavlova, L.G., Polar Symposium, 20th, Lublin, Poland, June 3-5, 1993. Man impact on polar environment. Edited by J. Repelewska-Pękalowa and K. Pękala, Lublin, Poland, Marie Curie-Skłodowska University, 1993, p.209-210.

Environmental impact, Ecosystems, Water pollution, Barents Sea

50-2191

Gamma emitters in the Barents Sea area.

Matishov, D.G., Szczypa, J., Polar Symposium, 20th, Lublin, Poland, June 3-5, 1993. Man impact on polar environment. Edited by J. Repelewska-Pękalowa and K. Pękala, Lublin, Poland, Marie Curie-Skłodowska University, 1993, p.211-228, 8 refs.

Radioactive isotopes, Lichens, Mosses, Bottom sediment, Algae, Radioactivity, Pollution, Barents Sea, Russia—Novaya Zemlya, Russia—Franz Josef Land

50-2192

Temperatures in the plant communities of the Ariekammen-Fugleberget catchment area (West Spitsbergen).

Moczydłowski, E., Piroźnikow, E., Polar Symposium, 20th, Lublin, Poland, June 3-5, 1993. Man impact on polar environment. Edited by J. Repelewska-Pękalowa and K. Pękala, Lublin, Poland, Marie Curie-Skłodowska University, 1993, p.229-232, With Polish summary. 16 refs.

Plants (botany), Plant physiology, Tundra vegetation, Arctic landscapes, Norway—Spitsbergen

50-2193

Bryophytes collected in arctic tundra of the Lyellstranda region (Western Spitsbergen) in 1987 and 1988.

Swięs, F., Karczmarz, K., Polar Symposium, 20th, Lublin, Poland, June 3-5, 1993. Man impact on polar environment. Edited by J. Repelewska-Pękalowa and K. Pękala, Lublin, Poland, Marie Curie-Skłodowska University, 1993, p.249-271, With Polish summary. 28 refs.

Tundra vegetation, Tundra terrain, Plants (botany), Site surveys, Mosses, Lichens, Norway—Spitsbergen

50-2194

Dynamics of underground waters in Calypsostranda region in 1990 (Western Spitsbergen).

Bartoszewski, S., Polar Symposium, 20th, Lublin, Poland, June 3-5, 1993. Man impact on polar environment. Edited by J. Repelewska-Pękalowa and K. Pękala, Lublin, Poland, Marie Curie-Skłodowska University, 1993, p.285-292, With Polish summary. 16 refs.

Hydrography, Ground water, Permafrost hydrology, Active layer, Norway—Spitsbergen

50-2195

Tectonics sketch of the offshore area within Hornsund region, Spitsbergen.

Bednarek, J., Rudowski, S., Zalewski, S.M., Polar Symposium, 20th, Lublin, Poland, June 3-5, 1993. Man impact on polar environment. Edited by J. Repelewska-Pękalowa and K. Pękala, Lublin, Poland, Marie Curie-Skłodowska University, 1993, p.293-297, With Polish summary. 7 refs.

Tectonics, Bedrock, Fjords, Norway—Spitsbergen

50-2196

Contemporaneous volcanoes of Bransfield Rift, West Antarctica.

Birkenmajer, K., Polar Symposium, 20th, Lublin, Poland, June 3-5, 1993. Man impact on polar environment. Edited by J. Repelewska-Pękalowa and K. Pękala, Lublin, Poland, Marie Curie-Skłodowska University, 1993, p.299-303, With Polish summary.

Volcanoes, Bottom topography, Antarctica—West Antarctica

The Bransfield Rift is a Cenozoic structure 15-20 km wide within the Bransfield Basin (some 100 km wide) which separates the mainly Mesozoic magmatic arc of the Antarctic Peninsula from the Late Mesozoic-Cenozoic magmatic arc of the South Shetland Is. Incipient rifting started there at the end of Oligocene, 26 to 22 Ma, and continued at a slow rate through Early Miocene. At that time a system of antithetic faults developed, cutting through Upper Oligocene and older rocks along the outer margin of the rift, which were followed by basaltic to andesitic dyke and plug intrusion in several stages between 22 and 20 Ma, and at 14 Ma. There is a gap in geological evidence for the character of the rift evolution during the Late Miocene through Pliocene stages. (Auth. mod.)

50-2197

Geological map (1:25,000) of the SW part of Wedel Jarlsberg Land.

Czerny, J., Kieres, A., Manecki, A., Manecki, M., Rajchel, J., Polar Symposium, 20th, Lublin, Poland, June 3-5, 1993. Man impact on polar environment. Edited by J. Repelewska-Pękalowa and K. Pękala, Lublin, Poland, Marie Curie-Skłodowska University, 1993, p.305-314, With Polish summary. 9 refs.

Geological maps, Tectonics, Stratigraphy, Lithology, Norway—Spitsbergen

50-2198

TEM and SEM studies of organic forms in anthraxolite coal from Krakken (Spitsbergen).

Czerny, J., Kwiecińska, B., Manecki, M., Polar Symposium, 20th, Lublin, Poland, June 3-5, 1993. Man impact on polar environment. Edited by J. Repelewska-Pękalowa and K. Pękala, Lublin, Poland, Marie Curie-Skłodowska University, 1993, p.315-319, With Polish summary. 2 refs.

Coal, Microbiology, Norway—Spitsbergen

50-2199

Natural resources of the northern polar regions: its use and protection.

Demek, J., Polar Symposium, 20th, Lublin, Poland, June 3-5, 1993. Man impact on polar environment. Edited by J. Repelewska-Pękalowa and K. Pękala, Lublin, Poland, Marie Curie-Skłodowska University, 1993, p.321-327, 9 refs.

Environmental protection, Natural resources, Environmental impact

50-2200

Geochemistry of niveo-eolian sediments in the northern part of Wedel Jarlsberg Land, Spitsbergen.

Górniak, A., Wojtanowicz, J., Polar Symposium, 20th, Lublin, Poland, June 3-5, 1993. Man impact on polar environment. Edited by J. Repelewska-Pękalowa and K. Pękala, Lublin, Poland, Marie Curie-Skłodowska University, 1993, p.333-339, With Polish summary. 14 refs.

Geochemistry, Sediments, Eolian soils, Chemical composition, Grain size, Bitumens, Loess, Norway—Spitsbergen

50-2201

Development of fluvial system of the Dunder Basin (Western Spitsbergen).

Harasimiuk, M., Król, T., Polar Symposium, 20th, Lublin, Poland, June 3-5, 1993. Man impact on polar environment. Edited by J. Repelewska-Pękalowa and K. Pękala, Lublin, Poland, Marie Curie-Skłodowska University, 1993, p.341-348, With Polish summary. 2 refs.

River basins, Channels (waterways), Glaciers, Glacial geology, Norway—Spitsbergen

50-2202

Development of southern Bellsund beaches (West Spitsbergen).

Jezierski, W., Polar Symposium, 20th, Lublin, Poland, June 3-5, 1993. Man impact on polar environment. Edited by J. Repelewska-Pękalowa and K. Pękala, Lublin, Poland, Marie Curie-Skłodowska University, 1993, p.349-360, With Polish summary. 14 refs.

Beaches, Shores, Landscape types, Geomorphology, Norway—Spitsbergen

50-2203

Ground temperature of permafrost active layer in the Fugleberget catchment basin (SW Spitsbergen) in the winter season 1985/1986.

Kamiński, A., Wach, J., Polar Symposium, 20th, Lublin, Poland, June 3-5, 1993. Man impact on polar environment. Edited by J. Repelewska-Pękalowa and K. Pękala, Lublin, Poland, Marie Curie-Skłodowska University, 1993, p.361-367, With Polish summary. 12 refs.

Soil temperature, Active layer, Permafrost thermal properties, Frozen ground temperature, Norway—Spitsbergen

50-2204

Types of atmospheric circulation in the region of H. Arctowski Station (South Shetland Islands) in the years 1986-1989.

Kejna, M., Polar Symposium, 20th, Lublin, Poland, June 3-5, 1993. Man impact on polar environment. Edited by J. Repelewska-Pękalowa and K. Pękala, Lublin, Poland, Marie Curie-Skłodowska University, 1993, p.369-378, With Polish summary. 20 refs.

Atmospheric circulation, Synoptic meteorology, Polar atmospheres, Antarctica—Arctowski Station

Based on the calendar of types of atmospheric circulations, according to T. Niedźwiedź (1981), the frequency of occurrences of synoptic situations at the Arctowski Station for the years 1986-1989 is calculated and presented in graphs.

50-2205

Soil studies in the region of southern Bellsund area (Western Spitsbergen).

Klimowicz, Z., Uziak, S., Melke, J., Polar Symposium, 20th, Lublin, Poland, June 3-5, 1993. Man impact on polar environment. Edited by J. Repelewska-Pękalowa and K. Pękala, Lublin, Poland, Marie Curie-Skłodowska University, 1993, p.379-389, With Polish summary. 10 refs.

Geocryology, Cryogenic soils, Soil classification, Soil formation, Soil mapping, Grain size, Soil chemistry, Soil physics, Norway—Spitsbergen

50-2206

Discussion on the basis including naled sheets processes producing ice-cored moraine ridges.

Kłysz, P., Polar Symposium, 20th, Lublin, Poland, June 3-5, 1993. Man impact on polar environment. Edited by J. Repelewska-Pękalowa and K. Pękala, Lublin, Poland, Marie Curie-Skłodowska University, 1993, p.391-401, With Polish summary. 23 refs.

Naleds, Moraines, Glacier ice, Pressure ridges

50-2207

Winter outflows of waters from the Werenskiold Glacier in the hydrological year 1985/1986.

Krawczyk, W.E., Wach, J., Polar Symposium, 20th, Lublin, Poland, June 3-5, 1993. Man impact on polar environment. Edited by J. Repelewska-Pękalowa and K. Pękala, Lublin, Poland, Marie Curie-Skłodowska University, 1993, p.403-411, With Polish summary. 11 refs.

Glacial rivers, Glacier melting, Glacial hydrology, Norway—Spitsbergen

50-2208

Contemporary deglaciation of the Recherche and Renard Glaciers in the Bellsund region (Western Spitsbergen).

Reder, J., Polar Symposium, 20th, Lublin, Poland, June 3-5, 1993. Man impact on polar environment. Edited by J. Repelewska-Pękalowa and K. Pękala, Lublin, Poland, Marie Curie-Skłodowska University, 1993, p.421-427, With Polish summary. 23 refs.

Glacier ablation, Glacier oscillation, Norway—Spitsbergen

50-2209

Energy flow to arctic tundra surface and experiences of induced disturbances.

Rydén, B.E., Polar Symposium, 20th, Lublin, Poland, June 3-5, 1993. Man impact on polar environment. Edited by J. Repelewska-Pękalowa and K. Pękala, Lublin, Poland, Marie Curie-Skłodowska University, 1993, p.429-438, 15 refs.

Environmental impact, Permafrost preservation, Pipelines, Thermal conductivity, Peat, Heat balance

50-2210

Late Weichselian deglaciation and glaci-marginal formations in the Murman offshore, the Barents Sea.

Samoĭlovich, IU.G., Matisbov, G.G., Tarasov, G.A., Polar Symposium, 20th, Lublin, Poland, June 3-5, 1993. Man impact on polar environment. Edited by J. Repelewska-Pękalowa and K. Pękala, Lublin, Poland, Marie Curie-Skłodowska University, 1993, p.439-440.

Glacial geology, Periglacial processes, Glaciation, Geomorphology, Barents Sea, Russia—Murmansk

50-2211

Differentiation of neotectonic movements in western Sørkapp Land (Spitsbergen) on the ground of photointerpretation.

Szczęsny, R., Polar Symposium, 20th, Lublin, Poland, June 3-5, 1993. Man impact on polar environment. Edited by J. Repelewska-Pękalowa and K. Pękala, Lublin, Poland, Marie Curie-Skłodowska University, 1993, p.441-448, With Polish summary. 15 refs.

Tectonics, Photointerpretation, Geomorphology, Isostasy, Norway—Spitsbergen

50-2212

Degradation of ice-moraine ridges in natural conditions.

Szponar, A., Polar Symposium, 20th, Lublin, Poland, June 3-5, 1993. Man impact on polar environment. Edited by J. Repelewska-Pękalowa and K. Pękala, Lublin, Poland, Marie Curie-Skłodowska University, 1993, p.449-451, With Polish summary. 4 refs.

Moraines, Pressure ridges, Ablation, Ice melting

50-2213

Some questions of the Pleistocene sedimentation of the Barents Sea shelf.

Tarasov, G.A., Polar Symposium, 20th, Lublin, Poland, June 3-5, 1993. Man impact on polar environment. Edited by J. Repelewska-Pękalowa and K. Pękala, Lublin, Poland, Marie Curie-Skłodowska University, 1993, p.453-461, 6 refs.

Pleistocene, Sedimentation, Quaternary deposits, Glaciation, Stratigraphy, Microelement content, Barents Sea

50-2214

Dusty deposits (loesses) of the contemporary arctic zone.

Wojtanowicz, J., Polar Symposium, 20th, Lublin, Poland, June 3-5, 1993. Man impact on polar environment. Edited by J. Repelewska-Pękalowa and K. Pękala, Lublin, Poland, Marie Curie-Skłodowska University, 1993, p.463-469, With Polish summary. 28 refs.

Loess, Pleistocene, Periglacial processes, Norway—Spitsbergen, Russia—Franz Josef Land, Russia—Siberia, Chukchi Sea, United States—Alaska

A comparative analysis of dusty deposits from Antarctica and the Arctic shows significant differences which are attributed to climatic, geomorphologic and physical conditions of the two regions.

50-2215

Marine and glacial Quaternary deposits of the southern Sørkapp Land, Spitsbergen.

Wójcik, A., Ziaja, W., Polar Symposium, 20th, Lublin, Poland, June 3-5, 1993. Man impact on polar environment. Edited by J. Repelewska-Pękalowa and K. Pękala, Lublin, Poland, Marie Curie-Skłodowska University, 1993, p.471-478, With Polish summary. 25 refs.

Marine deposits, Quaternary deposits, Terraces, Glacial deposits, Moraines, Norway—Spitsbergen

50-2216

Landscape differentiation and development of the south-eastern Sørkapp Land, Spitsbergen.

Ziaja, W., Polar Symposium, 20th, Lublin, Poland, June 3-5, 1993. Man impact on polar environment. Edited by J. Repelewska-Pękalowa and K. Pękala, Lublin, Poland, Marie Curie-Skłodowska University, 1993, p.479-484, With Polish summary. 3 refs.

Landscape types, Landscape development, Glacier oscillation, Norway—Spitsbergen

50-2217

Report on the Czechoslovak biological diving expedition "Arctic '92".

Duvriš, Z., Polar Symposium, 20th, Lublin, Poland, June 3-5, 1993. Man impact on polar environment. Edited by J. Repelewska-Pękalowa and K. Pękala, Lublin, Poland, Marie Curie-Skłodowska University, 1993, p.485-493, 4 refs.

Expeditions, Marine biology, Ecosystems, Norway—Spitsbergen, Barents Sea

50-2218

14th Spitsbergen-Hornsund 91/92 Expedition.

Giżejewski, J., Polar Symposium, 20th, Lublin, Poland, June 3-5, 1993. Man impact on polar environment. Edited by J. Repelewska-Pękalowa and K. Pękala, Lublin, Poland, Marie Curie-Skłodowska University, 1993, p.495-496.

Expeditions, Norway—Spitsbergen

50-2219

Instrumentation to quantify snow accumulation and transport dynamics at two locations on the Ross Ice Shelf.

Braaten, D.A., *Antarctic journal of the United States,* 1994, 29(5), p.86-87, 4 refs.

Snow accumulation, Snow cover distribution, Snow surface, Snow survey tools, Wind factors, Ice sheets, Antarctica—Ross Ice Shelf

To obtain greater quantitative insight into the time-dependent processes of annual ice-sheet snow accumulation and transport dynamics, new instrumentation has been developed and was deployed Jan. 1994 at two Ross Ice Shelf locations influenced by different local wind regimes, but generally influenced by the same synoptic-scale storms. These sites are adjacent to the Willie Field and Ferrell automatic weather stations in the Ross I. region. This instrumentation, referred to as the microsphere dispersal system (MDS), automatically activates for a 10-second interval once every 14 days, dispersing inert, colored (high-albedo) glass microspheres with a diameter of 120 microns onto the snow surface. The microspheres act as a time marker and tracer to quantify accumulation rate and microphysical processes of snow transport, mixing, and surface feature formation which influence ice-sheet growth in a windswept environment. A schematic diagram of the pneumatic system is given.

50-2220

Drifted snow affects momentum exchange over sea ice.

Andreas, E.L., Claffey, K.J., MP 3732, *Antarctic journal of the United States,* 1994, 29(5), p.89-91, 9 refs.

Snowdrifts, Blowing snow, Wind factors, Sea ice, Antarctica—Weddell Sea

On Ice Station Weddell-1 (ISW-1), hourly surface level observations of many meteorological quantities were carried out almost continuously from Feb. 25 to May 29, 1992, including observations of drifting and blowing snow. The authors have combined these observations of wind-driven snow with hourly averaged wind speed at a height of 5 m and show the result in a figure, where the primary distinction is between drifting and blowing snow: drifting snow is below eye level; blowing snow is above eye level, and thus obscures visibility. The point that the figure establishes is that, on ISW-1 at fairly modest wind speeds (6-8 m/s), some form of wind-driven snow was present about 60% of the time. When the wind exceeds 6-8 m/s, it begins eroding any snowdrifts at right angles to it and deposits this snow to streamline the surface in the current wind direction. Consequently, if these high winds persist, the snow surface gets more streamlined as the drifts build.

50-2221

Wave-pancake ice interactions.

Shen, H.H., Frankenstein, S., *Antarctic journal of the United States,* 1994, 29(5), p.91-92, 2 refs.

Sea ice, Ice formation, Ice water interface, Ice floes, Ocean waves, Antarctica—Weddell Sea

During the 1986 Winter Weddell Sea Project, a new mechanism for the formation of ice at the advancing edge was observed. This so-called pancake cycle begins with a high rate of ice-crystal production in a turbulent wave field. These crystals later congeal into circular-shaped floes, typically less than 1 m in diameter. These floes are called pancake ice. The presence of ocean waves is believed to be responsible for this pancake cycle. This study investigated, both experimentally and theoretically, how waves interact with individual pancake floes to form a continuous ice sheet.

50-2222

Observations on the melting rates of brash ice, Arthur Harbor, Antarctic Peninsula.

Smith, N.D., Ashley, G.M., *Antarctic journal of the United States,* 1994, 29(5), p.92-94, 6 refs.

Icebergs, Ice melting, Ice water interface, Ocean waves, Glaciers, Calving, Antarctica—Arthur Harbor

Observations at Arthur Harbor indicate a predominance of brash ice (i.e., less than 2 m icebergs) calving off Maar Glacier. Initial observations of iceberg distribution patterns suggested highly variable melt rates that were controlled in part by water-surface roughness. A series of exploratory experiments was therefore established to examine the rates at which brash ice melts in Arthur Harbor and, by implication, subpolar marine settings in general. Both laboratory and field observations show that melt rates of brash ice increase significantly with agitation of surrounding water. Under normal sea conditions at Arthur Harbor, most icebergs under 2 m in diameter will likely melt within 24 hours if exposed to wave attack. Under these circumstances, most ice-rafted debris will be transported only short distances from calving tidewater glaciers in subpolar regions.

50-2223

Sedimentation at a subpolar tidewater glacier, Maar Ice Piedmont, Anvers Island, Antarctic Peninsula.

Ashley, G.M., Smith, N.D., Goss, M.C., Smith, P.C., *Antarctic journal of the United States,* 1994, 29(5), p.94-96, 4 refs.

Marine geology, Sedimentation, Meltwater, Sea ice, Air ice water interaction, Antarctica—Arthur Harbor

A 2 month intensive study of sedimentation processes was carried out in austral summer 1993-94 near a tidewater portion of the Maar Ice Piedmont in Arthur Harbor. Data consist of conductivity-temperature-turbidity-depth (CTTD) profiles, water samples, and sediment-trap catches to study processes and patterns of sediment dispersal and sedimentation; bottom cores and grabs to document the record of recent glacial marine sedimentation; and video surveys of the ice terminus and the ice-proximal sea bottom with a remotely operated vehicle.

50-2224

Western Weddell stratification and ice cover.

Gordon, A.L., Huber, B.A., *Antarctic journal of the United States,* 1994, 29(5), p.97-99, 10 refs.

Sea ice distribution, Ice volume, Ice water interface, Oceanography, Antarctica—Weddell Sea

The southern ocean sea-ice extent is characterized by large seasonal pulsations. Much of the perennial ice is concentrated along Antarctica's coastline, with the most extensive cover in the western Weddell Sea, the Bellingshausen Sea, and the Amundsen Sea. In the western Weddell Sea, the nearly 100% concentration of perennial ice is persistent at an extent of 1.2 million km^2. The extent of the perennial ice depends on the ice drift. A number of testable hypotheses are put forward to explain why the western Weddell Sea ice cover differs from the seasonal cover to the east.

50-2225

Oceanographic expedition to the Amundsen and Bellingshausen Seas.

Jacobs, S.S., Hellmer, H.H., Schlosser, P., Smethie, W.M., Jr., *Antarctic journal of the United States,* 1994, 29(5), p.109-111, 16 refs.

Oceanographic surveys, Bottom topography, Icebergs, Antarctica—Amundsen Sea, Antarctica—Bellingshausen Sea

The icebreaker *Nathaniel B. Palmer* was engaged from Feb. 14 to Apr. 5, 1994 to conduct an oceanographic investigation along the southeast Pacific-Antarctic continental margin. The National Science Foundation and other agencies supported several projects that complemented the primary ocean measurements. These included geochemical sampling for carbon dioxide, chlorofluorocarbons (CFCs), helium isotopes, oxygen isotopes, tritium, and nutrients. Preliminary results reveal that the Amundsen and Bellingshausen Sea shelves are remarkably different from similarly broad shelf regions in the Ross and Weddell Seas. The local bottom topography differs widely from that shown on currently available charts; canyons or depressions often extend to or along the coastline. The authors encountered large numbers of icebergs, similarly to 1992 observations along the antarctic circle in this sector.

50-2226

Sea-ice evolution in the Amundsen and Bellingshausen Seas.

Jacobs, S.S., *Antarctic journal of the United States,* 1994, 29(5), p.111-113, 6 refs.

Sea ice distribution, Ice volume, Ice edge, Seasonal variations, Antarctica—Amundsen Sea, Antarctica—Bellingshausen Sea

Sea-ice retreat was one factor that led to the Feb. and Mar. 1994 Amundsen and Bellingshausen Seas cruise of the *Nathaniel B. Palmer.* Underway observations of ice extent and type were made by several groups aboard the *Palmer.* Results show that the 1994 summer ice edge did not attain the high latitude of the recent record minima but remained below the 21 year average. In both Jan. and Apr. 1994 the ice edge was farther south than during 18 of 21 prior years. The ship's relatively easy access to the Amundsen and Bellingshausen Seas coastlines suggests that the apparent northern ice-edge retreat was not simply caused by stronger southward winds compacting the sea-ice cover.

50-2227

Is this little PIG in hot water?

Jenkins, A., Jacobs, S.S., Keys, H., *Antarctic journal of the United States,* 1994, 29(5), p.121-122, 11 refs.

Glacier melting, Calving, Ice shelves, Oceanographic surveys, Antarctica—Pine Island Glacier, Antarctica—Pine Island Bay

The glaciers discharging into Pine Island Bay have been the subject of controversy since Hughes (1981) noted the lack of any substantial ice shelf that could regulate the outflow. In mid-Mar. 1994, the authors measured the position and height of the terminus of Pine Island Glacier (PIG) from the *Nathaniel B. Palmer.* Preliminary results show the location of the calving front to be similar to its 1973 position. These findings seem more consistent with a steady-state condition than with thickening or surging, but this implies that a considerable volume of ice must be lost to basal melting of the floating glacier, even allowing for possible losses to surface sublimation. The authors infer a mean basal melt rate in excess of 10 m/y; this is more than an order of magnitude higher than has been estimated for the larger antarctic ice shelves. They also made a variety of oceanographic observations in Pine Island Bay, and these help to explain the probable high basal melt rate of the floating portion of PIG.

50-2228

Pneumatic regeneration system of a filtration substance in filters. [Pnematické regenerační zařízení filtrační látky ve filtrech]

Tomaides, M., Albrecht, J., *Č.S.R. Úřad pro patenty a vynálezy. Patent,* Feb. 15, 1962, 3p., č. 102762, In Czech.

Filters, Countermeasures, Snow, Design, Equipment

50-2229

Modular articulated track for automotive vehicles. [Chenille souple modulaire pour engin automoteur]

Remy, C., Remy, P., *World Intellectual Property Organization. Patent Cooperation Treaty. Patent,* May 13, 1993, 14p. + appends., No.93/09022, In French with English title and abstract.

Tracked vehicles, Design, Equipment

50-2230
Direct calcium magnesium acetate production.
Flickinger, M.C., Hanson, R.S., Schendel, F.J., Anderson, C.R., August, P.R., *World Intellectual Property Organization. Patent Cooperation Treaty. Patent,* Nov. 26, 1992, 29p. + appends., No.92/20810, Refs. passim.
Chemical ice prevention, Salting, Ice removal, Countermeasures, Bacteria

50-2231
Snow-scoop with a tipping mechanism.
Mannio, J., *World Intellectual Property Organization. Patent Cooperation Treaty. Patent,* June 10, 1993, 7p., No.93/11304, From Finnish.
Snow removal equipment, Design

50-2232
Ice-preventive covering.
Persson, S., Andersson, L.-O., *World Intellectual Property Organization. Patent Cooperation Treaty. Patent,* May 29, 1992, 7p., No.92/08767, From Swedish.
Covering, Ice prevention, Countermeasures, Polymers, Rubber, Aircraft icing

50-2233
Process for the treatment of a waste water stream.
Janssen, J.J., Mos, A.L., Simons, T.J.L.W., *United Kingdom. Patent Office. Patent,* June 9, 1993, 13p., GB-2,262,052/A.
Water treatment, Waste treatment, Water pollution, Freezing

50-2234
Thermal anti-icing of aircraft structures.
Arnold, M.J., Cole, D., *United Kingdom. Patent Office. Patent,* Mar. 24, 1993, 17p., GB-2,259,679/A.
Ice prevention, Aircraft icing, Countermeasures, Equipment, Thermal insulation

50-2235
Calcium chloride production process.
Davidson, C.M., Derrah, R.I., *United Kingdom. Patent Office. Patent,* Aug. 18, 1993, 17p., GB-2,264,113/A.
Chemical ice prevention, Salting, Ice melting

50-2236
Prevention of icing in the intakes of aerospace propulsors.
Scott-Scott, J.L., Belcher, B.L., Bond, A., *United Kingdom. Patent Office. Patent,* Sep. 4, 1991, 9p., GB-2,241,537/A.
Ice prevention, Aircraft icing, Countermeasures, Equipment, Water vapor

50-2237
Improvements in and relating to emulsion explosives.
Cechanski, M., *Australia. Patent Office. Patent,* May 20, 1993, 15p., AU-B-32825/93.
Explosives, Blasting, Boreholes, Cold weather performance

50-2238
Method of controlling spring snow thawing on slopes.
Feodorov, L., *Canada. Patent Office. Patent,* Apr. 2, 1993, 5p., No.2,090,814.
Snowmelt, Slope stability, Countermeasures, Ground thawing, Soil erosion

50-2239
Belt track for track-laying vehicles and snowmobiles.
Wiesner, H.H., Spies, K., Oertgen, E., *Canada. Patent Office. Patent,* Jan. 27, 1991, 8p., No.2,017,022.
Design, Tracked vehicles, Snow vehicles, Equipment

50-2240
Ice zipper.
Tetrault, M., *Canada. Patent Office. Patent,* Dec. 29, 1987, 10p., No.1,230,784.
Ice navigation, Icebreakers, Ice breaking, Equipment, Ships, Channels (waterways)

50-2241
Device for pushing broken ice ahead of a ship or the like.
Donderi, D.C., *Canada. Patent Office. Patent,* Oct. 16, 1990, 19p., No.1,275,202.
Ice navigation, Icebreakers, Ice breaking, Equipment, Ships

50-2242
Windshield defroster.
Yoshikawa, H., Morisaka, M., *U.S. Patent Office. Patent,* Jan. 20, 1987, 8 col., USP-4,637,298, 7 refs.
Defrosting, Countermeasures, Ice removal, Electric equipment, Design, Vehicles, Windows

50-2243
Frost damage proofed pile.
Takeda, T., Omori, K., Ohkuma, T., Kideera, K., Nakagawa, S., Hirose, T., *U.S. Patent Office. Patent,* Apr. 4, 1989, 16 col., USP-4,818,148, 15 refs.
Piles, Pipes (tubes), Frost protection, Countermeasures, Covering, Design, Frost heave

50-2244
Self-regulating deicer valve.
Phillips, R.W., II., *U.S. Patent Office. Patent,* Apr. 5, 1988, 4 col., USP-4,735,554, 9 refs.
Countermeasures, Ice removal, Ice prevention, Design, Aircraft icing, Equipment

50-2245
Ice accretion in freezing rain.
Jones, K.F., CR 96-02, *U.S. Army Cold Regions Research and Engineering Laboratory. Report,* Apr. 1996, 23p., ADA-310 659, 33 refs.
Rain, Ice storms, Ice loads, Icicles, Ice accretion, Heat balance, Ice models, Wind factors, Heat flux, Mathematical models, Solar radiation

Ice accreted on structures from freezing rain causes both increased vertical loads and increased wind loads, due to the larger projected area of the structure. Structural failures initiated by ice loads frequently cause millions of dollars of damage to overhead power and communication lines, towers, and other ice-sensitive structures. There is little information on ice loads to use in the design of these structures, so freezing-rain models have been developed for use with weather measurements to determine the severity of accreted ice loads from historical data. This report describes a detailed heat-balance ice accretion model, including the important heat fluxes in freezing rain and allowing the accretion of runoff water in the form of icicles. It also presents a simple algorithm for calculating the ice load on components with different diameters and cross sections. Collision efficiency in freezing rain and the calculation of the wind-on-ice load are also discussed. Model results are compared with the ice load measured during a recent freezing rain storm, and to each other, using 45 years of weather data from Des Moines, IA.

50-2246
Anti-skid chain for vehicle tires.
Franklin, C.R., *U.S. Patent Office. Patent,* Jan. 21, 1992, 20 col., USP-5,082,039, 18 refs.
Tires, Countermeasures, Traction, Trafficability, Cold weather operation, Design, Equipment

50-2247
Geocryological studies in arctic regions, Vol. 4: Problems in the interaction of the cryolithozone with oil and gas. [Geokriologicheskie issledovaniia v arkticheskikh raĭonakh, Vypusk 4: Problemy vzaimodeĭstviia kriolitozony i neftegazovykh ob"ektov]
Geokriologicheskie issledovaniia v arkticheskikh raĭonakh; mezhdunarodnyĭ simpozium, SSSR, IAmburg, Avgust 1989 (Geocryological Studies in Arctic Regions: International Symposium. USSR, Yamburg, August 1989), Mel'nikov, V.P., ed, Solov'eva, L.N., ed, Tiumen', AN SSSR, 1990, 145p., In Russian. Refs. passim. For individual papers see 50-2248 through 50-2261.
Geocryology, Permafrost bases, Permafrost beneath structures, Soil freezing, Cold weather construction

50-2248
Field experiments on uplift force to a steel pipe due to frost heaving—its application into reduction method.
Fukuda, M., Nakagawa, S., Geokriologicheskie issledovaniia v arkticheskikh raĭonakh; Mezhdunarodnyĭ simpozium, SSSR, IAmburg, avgust 1989; Vyp. 4: Problemy vzaimodeĭstviia kriolitozony i neftegazovykh ob"ektov (Geocryological studies in arctic regions; International Symposium, USSR, Yamburg, August 1989; Vol. 4: Problems in the interaction of the cryolithozone with oil and gas structures). Edited by V.P. Mel'nikov and L.N. Solov'eva, Tiumen', AN SSSR, 1989, p.3-25, In Russian. 8 refs.
Pipes (tubes), Frost heave, Ice adhesion, Upwelling, Creep, Soil freezing, Strain tests, Strain measuring instruments, Countermeasures

50-2249
Laying of oil industry pipelines in permafrost conditions in Western Siberia. [Prokladka neftepromyslovykh truboprovodov v usloviiakh vechnomerzlykh gruntov Zapadnoĭ Sibiri]
Karavaev, S.S., Skvortsov, I.D., Geokriologicheskie issledovaniia v arkticheskikh raĭonakh; Mezhdunarodnyĭ simpozium, SSSR, IAmburg, avgust 1989; Vyp. 4: Problemy vzaimodeĭstviia kriolitozony i neftegazovykh ob"ektov (Geocryological studies in arctic regions; International Symposium, USSR, Yamburg, August 1989; Vol. 4: Problems in the interaction of the cryolithozone with oil and gas structures). Edited by V.P. Mel'nikov and L.N. Solov'eva, Tiumen', AN SSSR, 1989, p.26-35, In Russian.
Pipe laying, Permafrost beneath structures, Pipelines, Petroleum industry, Cold weather construction, Russia—Siberia

50-2250
Calculating the reliability of a pipeline base, constructed on surface foundations. [Raschet nadezhnosti osnovaniia truboprovoda, vosvodimogo na poverkhnostnykh fundamentakh]
Maksimenko, S., IAkovlev, S.V,, Pustovoĭt, G.P., Geokriologicheskie issledovaniia v arkticheskikh raĭonakh; Mezhdunarodnyĭ simpozium, SSSR, IAmburg, avgust 1989; Vyp. 4: Problemy vzaimodeĭstviia kriolitozony i neftegazovykh ob"ektov (Geocryological studies in arctic regions; International Symposium, USSR, Yamburg, August 1989; Vol. 4: Problems in the interaction of the cryolithozone with oil and gas structures). Edited by V.P. Mel'nikov and L.N. Solov'eva, Tiumen', AN SSSR, 1989, p.36-41, In Russian. 7 refs.
Pipe laying, Permafrost beneath structures, Analysis (mathematics), Pipeline supports, Permafrost bases

50-2251
Supporting permafrost bases for tower pile-drivers of vertical mine shafts while in operation. [Podderzhanie mnogoletnemerzlykh osnovaniĭ bashennykh koprov vertikal'nykh stvolov shakht v rabotosposobnom sostoianii]
Izakson, V.IU., Petrov, E.E., Shilo, A.V., Geokriologicheskie issledovaniia v arkticheskikh raĭonakh; Mezhdunarodnyĭ simpozium, SSSR, IAmburg, avgust 1989; Vyp. 4: Problemy vzaimodeĭstviia kriolitozony i neftegazovykh ob"ektov (Geocryological studies in arctic regions; International Symposium, USSR, Yamburg, August 1989; Vol. 4: Problems in the interaction of the cryolithozone with oil and gas structures). Edited by V.P. Mel'nikov and L.N. Solov'eva, Tiumen', AN SSSR, 1989, p.42-50, In Russian. 3 refs.
Permafrost bases, Thaw depth, Frozen rock temperature, Shafts (excavations), Cold weather operation, Pile driving, Mining, Towers, Supports

50-2252

Study of deformation properties of freezing and thawing soils for the purpose of construction in regions of the Far North. [Issledovanie deformativnykh svoĭstv promerzaiushchikh i ottaivaiushchikh gruntov dlia tseleĭ stroitel'stva v raĭonakh Kraĭnego Severa]

Ganeles, L.B., Orzhekhovskiĭ, IU.R., Geokriologicheskie issledovaniia v arkticheskikh raĭonakh; Mezhdunarodnyĭ simpozium, SSSR, IAmburg, avgust 1989; Vyp. 4: Problemy vzaimodeĭstviia kriolitozony i neftegazovykh ob"ektov (Geocryological studies in arctic regions; International Symposium, USSR, Yamburg, August 1989; Vol. 4: Problems in the interaction of the cryolithozone with oil and gas structures). Edited by V.P. Mel'nikov and L.N. Solov'eva, Tiumen', AN SSSR, 1989, p.51-60, In Russian. 8 refs.

Cold weather construction, Freeze thaw cycles, Soil freezing, Ground thawing, Deformation, Active layer, Frost heave, Mathematical models, Permafrost bases, Foundations, Russia—Far North

50-2253

Determining the bearing strength of frozen foundations with variable temperature. [K opredeleniiu nesushcheĭ sposobnosti merzlykh osnovaniĭ s peremennoĭ temperaturoĭ]

Konovalov, A.A., Geokriologicheskie issledovaniia v arkticheskikh raĭonakh; Mezhdunarodnyĭ simpozium, SSSR, IAmburg, avgust 1989; Vyp. 4: Problemy vzaimodeĭstviia kriolitozony i neftegazovykh ob"ektov (Geocryological studies in arctic regions; International Symposium, USSR, Yamburg, August 1989; Vol. 4: Problems in the interaction of the cryolithozone with oil and gas structures). Edited by V.P. Mel'nikov and L.N. Solov'eva, Tiumen', AN SSSR, 1989, p.61-69, In Russian. 6 refs.

Permafrost bases, Foundations, Bearing strength, Temperature variations, Analysis (mathematics), Permafrost thermal properties, Frozen ground temperature, Frozen ground strength

50-2254

Some aspects of the mechanics of ice strength and break-up as applied to erecting ice structures in the Arctic. [Nekotorye aspekty mekhaniki prochnosti i razrusheniia l'da v probleme obosnovaniia metodov vozvedeniia l'dokompozitnykh sooruzheniĭ v Arktike]

Krasnov, IU.N., Geokriologicheskie issledovaniia v arkticheskikh raĭonakh; Mezhdunarodnyĭ simpozium, SSSR, IAmburg, avgust 1989; Vyp. 4: Problemy vzaimodeĭstviia kriolitozony i neftegazovykh ob"ektov (Geocryological studies in arctic regions; International Symposium, USSR, Yamburg, August 1989; Vol. 4: Problems in the interaction of the cryolithozone with oil and gas structures). Edited by V.P. Mel'nikov and L.N. Solov'eva, Tiumen', AN SSSR, 1989, p.70-72, In Russian. 12 refs.

Ice (construction material), Cold weather construction, Ice strength, Ice breakup, Ice mechanics

50-2255

Basic trends in improving the structure and construction engineering of bases and foundations of oil and gas installations on permafrost. [Osnovnye napravleniia sovershenstvovaniia konstruktsiĭ i tekhnologiĭ ustroĭstva osnovaniĭ i fundamentov neftepromyslovykh sooruzheniĭ na vechnomerzlykh gruntakh]

Leĭkam, A.B., Cheglintseva, L.A., Geokriologicheskie issledovaniia v arkticheskikh raĭonakh; Mezhdunarodnyĭ simpozium, SSSR, IAmburg, avgust 1989; Vyp. 4: Problemy vzaimodeĭstviia kriolitozony i neftegazovykh ob"ektov (Geocryological studies in arctic regions; International Symposium, USSR, Yamburg, August 1989; Vol. 4: Problems in the interaction of the cryolithozone with oil and gas structures). Edited by V.P. Mel'nikov and L.N. Solov'eva, Tiumen', AN SSSR, 1989, p.73-78, In Russian.

Cold weather construction, Foundations, Permafrost bases, Permafrost beneath structures, Design, Engineering

50-2256

Migration of moisture during the freezing of porous media. [O migratsii vlagi pri promerzanii poristykh sred]

Gorelik, IA.B., Kolunin, V.S., Geokriologicheskie issledovaniia v arkticheskikh raĭonakh; Mezhdunarodnyĭ simpozium, SSSR, IAmburg, avgust 1989; Vyp. 4: Problemy vzaimodeĭstviia kriolitozony i neftegazovykh ob"ektov (Geocryological studies in arctic regions; International Symposium, USSR, Yamburg, August 1989; Vol. 4: Problems in the interaction of the cryolithozone with oil and gas structures). Edited by V.P. Mel'nikov and L.N. Solov'eva, Tiumen', AN SSSR, 1989, p.79-96, In Russian. 20 refs.

Unfrozen water content, Moisture transfer, Porous materials, Soil freezing, Mathematical models

50-2257

Mechanical properties of high ice content ground as a composite material. [Mekhanicheskie svoĭstva sil'nol'distogo grunta kak kompozitnogo materiala]

Gerasimov, A.S., Aleksandrov, I.G., Geokriologicheskie issledovaniia v arkticheskikh raĭonakh; Mezhdunarodnyĭ simpozium, SSSR, IAmburg, avgust 1989; Vyp. 4: Problemy vzaimodeĭstviia kriolitozony i neftegazovykh ob"ektov (Geocryological studies in arctic regions; International Symposium, USSR, Yamburg, August 1989; Vol. 4: Problems in the interaction of the cryolithozone with oil and gas structures). Edited by V.P. Mel'nikov and L.N. Solov'eva, Tiumen', AN SSSR, 1989, p.97-107, In Russian. 4 refs.

Frozen ground mechanics, Ground ice, Composite materials, Rheology, Mathematical models

50-2258

Characteristics of bituminoids of dispersed organic matter in permafrost and sub-cryogenic deposits. [Kharakteristika bituminoidov rasseiannogo organicheskogo veshchestva mnogoletnemerzlykh i subkriogennykh otlozheniĭ]

Tsarev, V.P., Degtiarev, B.V., Mizulina, N.B., Belan, V.M., Geokriologicheskie issledovaniia v arkticheskikh raĭonakh; Mezhdunarodnyĭ simpozium, SSSR, IAmburg, avgust 1989; Vyp. 4: Problemy vzaimodeĭstviia kriolitozony i neftegazovykh ob"ektov (Geocryological studies in arctic regions; International Symposium, USSR, Yamburg, August 1989; Vol. 4: Problems in the interaction of the cryolithozone with oil and gas structures). Edited by V.P. Mel'nikov and L.N. Solov'eva, Tiumen', AN SSSR, 1989, p.108-116, In Russian. 6 refs.

Bitumens, Glacial deposits, Permafrost, Geochemistry

50-2259

Effect of cryospheric cooling on the distribution of oil and gas in Siberian deposits. [Vozdeĭstvie kriosfernogo okhlazhdeniia na raspredelenia nefti i gaza v nedrakh Sibiri]

Bol'shakov, IU.A., Cherepanov, S.B., Geokriologicheskie issledovaniia v arkticheskikh raĭonakh; Mezhdunarodnyĭ simpozium, SSSR, IAmburg, avgust 1989; Vyp. 4: Problemy vzaimodeĭstviia kriolitozony i neftegazovykh ob"ektov (Geocryological studies in arctic regions; International Symposium, USSR, Yamburg, August 1989; Vol. 4: Problems in the interaction of the cryolithozone with oil and gas structures). Edited by V.P. Mel'nikov and L.N. Solov'eva, Tiumen', AN SSSR, 1989, p.117-121, In Russian. 9 refs.

Natural resources, Crude oil, Natural gas, Geocryology, Russia—Siberia

50-2260

Characteristics of the methods of seismic prospecting operations for oil and gas in regions with cryolithozone development. [Osobennosti metodiki seĭsmorazvedochnykh rabot na neft' i gaz v raĭonakh razvitiia kriolitozony]

Bevzenko, IU.P., Geokriologicheskie issledovaniia v arkticheskikh raĭonakh; Mezhdunarodnyĭ simpozium, SSSR, IAmburg, avgust 1989; Vyp. 4: Problemy vzaimodeĭstviia kriolitozony i neftegazovykh ob"ektov (Geocryological studies in arctic regions; International Symposium, USSR, Yamburg, August 1989; Vol. 4: Problems in the interaction of the cryolithozone with oil and gas structures). Edited by V.P. Mel'nikov and L.N. Solov'eva, Tiumen', AN SSSR, 1989, p.122-129, In Russian. 3 refs.

Crude oil, Natural gas, Natural resources, Seismic surveys, Geocryology, Geophysical surveys, Russia—Siberia

50-2261

Isotope techniques in permafrost investigations.

Michel, F.A., Geokriologicheskie issledovaniia v arkticheskikh raĭonakh; Mezhdunarodnyĭ simpozium, SSSR, IAmburg, avgust 1989; Vyp. 4: Problemy vzaimodeĭstviia kriolitozony i neftegazovykh ob"ektov (Geocryological studies in arctic regions; International Symposium, USSR, Yamburg, August 1989; Vol. 4: Problems in the interaction of the cryolithozone with oil and gas structures). Edited by V.P. Mel'nikov and L.N. Solov'eva, Tiumen', AN SSSR, 1989, p.130-145, 47 refs.

Isotope analysis, Oxygen isotopes, Ground water, Ground ice, Permafrost hydrology, Ice formation, Theories, Analysis (mathematics), Tritium

50-2262

Organization of regional forecasting services using oblique sounding of the ionosphere. [Organizatsiia regional'noĭ prognosticheskoĭ sluzhby s ispol'zovaniem naklonnogo zondirovaniia ionosfery]

Khodzha-Akhmedov, Ch.L., *St. Petersburg. Arkticheskiĭ i antarkticheskiĭ nauchno-issledovatel'skiĭ institut. Trudy*, 1991, Vol.427, p.6-14, In Russian. 5 refs.

Polar atmospheres, Atmospheric physics, Radio communication, Sounding, Forecasting, Russia—Murmansk, Antarctica—Molodezhnaya Station

General principles of the organization of forecasting centers are examined. Regional forecasting centers and the areas they serve are presented, including Molodezhnaya Station, which serves the entire antarctic region. Forecasts, compiled by the centers and based on data obtained from observation stations, are described. (Auth. mod.)

50-2263

Dynamics of the conditions for propagation of short-wave radio waves during a period of ionospheric disturbances. [Dinamika usloviĭ rasprostraneniia KV radiovoln v periody ionosfernykh vozmushcheniĭ]

Lukashkin, V.M., *St. Petersburg. Arkticheskiĭ i antarkticheskiĭ nauchno-issledovatel'skiĭ institut. Trudy*, 1991, Vol.427, p.25-35, In Russian. 7 refs.

Wave propagation, Atmospheric physics, Polar atmospheres, Radio communication, Atmospheric disturbances, Absorption

50-2264

Diagnostics of the polar ionosphere using oblique and reverse-oblique sounding. [Diagnostika poliarnoĭ ionosfery metodom naklonnogo i vozvratno-naklonnogo zondirovaniia]

Vovk, V.IA., *St. Petersburg. Arkticheskiĭ i antarkticheskiĭ nauchno-issledovatel'skiĭ institut. Trudy*, 1991, Vol.427, p.49-53, In Russian. 7 refs.

Polar atmospheres, Atmospheric physics, Sounding, Radio communication, Antarctica—Molodezhnaya Station, Antarctica—Vostok Station, Antarctica—Leningradskaya Station, Russia—Murmansk

The effect of the nonhomogeneity of electron concentration on the characteristics of the signal of the subauroral line of oblique sounding was studied, using ray paths. It was shown that the transfer of nonhomogeneity along the path leads to the change of the remote frequency response during oblique sounding. The Leningradskaya-Molodezhnaya and Vostok-Molodezhnaya lines were used in the study. (Auth mod.)

50-2265

Evaluation of ionospheric inhomogeneities using reverse-oblique sounding. [Diagnostika ionosfernykh neodnorodnosteĭ metodom VNZ]

Vovk, V.IA., *St. Petersburg. Arkticheskii i antarkticheskii nauchno-issledovatel'skii institut. Trudy*, 1991, Vol.427, p.54-64, In Russian. 8 refs.

Radio communication, Polar atmospheres, Atmospheric physics, Mathematical models, Backscattering, Antarctica—Molodezhnaya Station, Antarctica—Vostok Station, Antarctica—Leningradskaya Station

Studies of the ionosphere in the region of the auroral zone and the polar cap in Antarctica were conducted, using reverse-oblique sounding. Problems in interpreting the remote frequency characteristic of reverse-oblique sounding were examined. The Vostok-Molodezhnaya and Molodezhnaya-Leningradskaya lines were used in the study. (Auth. mod.)

50-2266

Studying correlated links between the lowest observed frequencies and errors in their prediction at high latitudes. [Issledovanie korreliatsionnykh sviazeĭ nainizshikh nabliudaemykh chastot i oshibok ikh prognozirovaniia v vysokikh shirotakh]

Ignatov, V.S., Khodzha-Akhmedov, Ch.L., *St. Petersburg. Arkticheskii i antarkticheskii nauchno-issledovatel'skii institut. Trudy*, 1991, Vol.427, p.71-79, In Russian. 4 refs.

Atmospheric physics, Very low frequencies, Forecasting, Accuracy, Polar atmospheres, Radio communication

50-2267

Predicting the maximum available frequencies using a numerical model of the high latitude ionosphere. [O prognozirovanii MPCh s ispol'zovaniem chislennoĭ modeli vysokoshirotnoĭ ionosfery]

Vovk, V.IA., Makarova, L.N., Moskvin, I.V., Shirochkov, A.V., Shumilov, I.A., *St. Petersburg. Arkticheskii i antarkticheskii nauchno-issledovatel'skii institut. Trudy*, 1991, Vol.427, p.80-84, In Russian. 4 refs.

Mathematical models, Forecasting, Radio waves, Polar atmospheres, Atmospheric physics

50-2268

Operational prediction of MNCh on high latitude short-wave radio lines allowing for geophysical obstacles. [Operativnoe prognozirovanie MNCh na vysokoshirotnykh KV-radioliniiakh s uchetom geofizicheskoĭ obstanovki]

Egorova, L.V., Lukashkin, V.M., *St. Petersburg. Arkticheskii i antarkticheskii nauchno-issledovatel'skii institut. Trudy*, 1991, Vol.427, p.85-89, In Russian. 3 refs.

Forecasting, Radio waves, Atmospheric physics, Polar atmospheres, Radio communication

50-2269

Studying the probability of the transmission of decameter radio waves over radio lines. [Issledovanie veroiatnosti prokhozhdeniia dekametrovykh radiovoln na odnoskachkovykh radioliniiakh]

Lukashkin, V.M., Romashov, IU.I., Shumilov, I.A., *St. Petersburg. Arkticheskii i antarkticheskii nauchno-issledovatel'skii institut. Trudy*, 1991, Vol.427, p.90-97, In Russian. 6 refs.

Atmospheric physics, Polar atmospheres, Radio communication

50-2270

Time-space variations in the probability of the appearance of F2 and Es modes during oblique-incidence sounding in the high latitude ionosphere. [Prostranstvenno-vremennye variatsii veroiatnosti poiavleniia modov F2 i Es pri naklonnom zondirovanii vysokoshirotnoĭ ionosfery]

Egorova, L.V., Lukashkin, V.M., *St. Petersburg. Arkticheskii i antarkticheskii nauchno-issledovatel'skii institut. Trudy*, 1991, Vol.427, p.98-106, In Russian. 8 refs.

Sounding, Polar atmospheres, Atmospheric physics, Seasonal variations, Solar activity, Geomagnetism, Russia—Murmansk, Russia—Heiss Island, Russia—Franz Josef Land

50-2271

Spectral deviations of HF signals on antarctic radio lines and their association with the state of the ionosphere. [Spektral'nye iskazheniia KV signalov na antarkticheskikh radioliniiakh i ikh sviaz' s sostoianiem ionosfery]

Khodzha-Akhmedov, Ch.L., Kozlov, A.I., *St. Petersburg. Arkticheskii i antarkticheskii nauchno-issledovatel'skii institut. Trudy*, 1991, Vol.427, p.107-123, In Russian. 13 refs.

Atmospheric physics, Polar atmospheres, Radio communication, Spectra, Analysis (mathematics), Antarctica—Molodezhnaya Station, Antarctica—Vostok Station, Antarctica—Bellingshausen Station, Antarctica—Leningradskaya Station

Results from the study of spectral deviations of HF signals on radio lines of varying length and orientation are presented. It is shown that the maximum distortion of spectra takes place at the equinox as well as along routes passing through the polar cap. The results are explained by the rules of movement for nonhomogeneities and the dispersion of radio signals in the ionosphere. (Auth. mod.)

50-2272

Comparison of the experimental and estimated values of the highest usable frequency on the Bellingshausen-Molodezhnaya path under winter conditions. [Sopostavlenie eksperimental'nykh i raschetnykh znacheniĭ MPCh na trasse Bellinsgauzen-Molodezhnaia dlia zimnikh uslovii]

Besprozvannaia, A.S., Vovk, V.IA., Eliseev, A.M., Moskvin, I.V., Khodzha-Akhmedov, Ch.L., *St. Petersburg. Arkticheskii i antarkticheskii nauchno-issledovatel'skii institut. Trudy*, 1991, Vol.427, p.139-143, In Russian. 7 refs.

Atmospheric physics, Polar atmospheres, Radio communication, Antarctica—Molodezhnaya Station, Antarctica—Bellingshausen Station

The results from the comparison of experimental and estimated values of the highest usable frequency over the Bellingshausen-Molodezhnaya path are presented. The estimation was carried out with the refraction integral method using an adapted standard global model of the ionosphere. It is shown that for the greater part of the day, the estimated and experimental values of the highest usable frequency coincide. (Auth. mod.)

50-2273

Research on technology for conquering and exploiting snow, 1988: opening a new tomorrow for the snow and cold regions. [Kokusetsu risetsu gijutsu kenkyu 1988: sekisetsu kanrei chiiki no asu o hiraku], Tokyo, Nihon shisutemu kaihatsu kenkyujo (Japanese Institute of Systems Development), 1988, 330p., In Japanese. For selected papers see 50-2274 through 50-2288.

DLC TD868.K64 1988 Orien Japan

Snow removal, Artificial melting, Road maintenance, Snow thermal properties, Air conditioning, Cooling systems, Snowmelt, Japan

50-2274

Using the thermal properties of snow. [Yuki no reinetsu riyo]

Tsushima, K., Kokusetsu risetsu gijutsu kenkyu 1988 (Research on technology for conquering and exploiting snow, 1988), Tokyo, Nihon shisutemu kaihatsu kenkyujo (Japanese Institute of Systems Development), 1988, p.105-107, In Japanese.

Snow thermal properties, Air conditioning, Cooling systems, Heat pipes, Heat transfer

50-2275

Actual conditions and problems in air conditioning of buildings by ice thermal storage. [Kori chikunetsu o mochi ita biru reibo no jittai to mondaiten]

Ibamoto, T., Kokusetsu risetsu gijutsu kenkyu 1988 (Research on technology for conquering and exploiting snow, 1988), Tokyo, Nihon shisutemu kaihatsu kenkyujo (Japanese Institute of Systems Development), 1988, p.108-115, In Japanese.

Ice thermal properties, Ice refrigeration, Air conditioning, Cooling systems, Heat pumps, Heat pipes, Heat transfer

50-2276

Current status and prospects of air conditioning systems using ice thermal storage. [Kori chikunetsu reibo shisutemu no genjo to tenbo]

Takakusa, M., Kokusetsu risetsu gijutsu kenkyu 1988 (Research on technology for conquering and exploiting snow, 1988), Tokyo, Nihon shisutemu kaihatsu kenkyujo (Japanese Institute of Systems Development), 1988, p.116-121, In Japanese.

Ice thermal properties, Ice refrigeration, Air conditioning, Cooling systems

50-2277

Possibility of using snow for home air conditioning. [Yuki o riyo shita jutaku rebo no kanosei]

Nishioka, T., Kokusetsu risetsu gijutsu kenkyu 1988 (Research on technology for conquering and exploiting snow, 1988), Tokyo, Nihon shisutemu kaihatsu kenkyujo (Japanese Institute of Systems Development), 1988, p.122-130, In Japanese.

Snow thermal properties, Houses, Air conditioning, Cooling systems, Cost analysis, Japan

50-2278

Possibilities and problems in the realization of snow-storage air conditioning systems. [Shusetsu reibo shisutemu no jitsugen kanosei to kadai]

Umemura, T., Kokusetsu risetsu gijutsu kenkyu 1988 (Research on technology for conquering and exploiting snow, 1988), Tokyo, Nihon shisutemu kaihatsu kenkyujo (Japanese Institute of Systems Development), 1988, p.131-136, In Japanese.

Snow disposal, Snow thermal properties, Air conditioning, Cooling systems, Municipal engineering, Cost analysis, Japan

50-2279

Technical evaluation of summer air conditioning for buildings using snow thermal storage in aquifers. [Yuki reinetsu no taisuiso e no chikunetsu o kaishita kaki tatemono reibo no gijutsu hyoka]

Umemiya, H., Kokusetsu risetsu gijutsu kenkyu 1988 (Research on technology for conquering and exploiting snow, 1988), Tokyo, Nihon shisutemu kaihatsu kenkyujo (Japanese Institute of Systems Development), 1988, p.137-140, In Japanese.

Snow thermal properties, Snowmelt, Ground water, Buildings, Air conditioning, Cooling systems, Heat recovery, Japan

50-2280

Possibilities of regional development by snow utilization. [Risetsu-gata chiiki kaihatsu no kanosei ni tsuite]

Taneda, M., Kokusetsu risetsu gijutsu kenkyu 1988 (Research on technology for conquering and exploiting snow, 1988), Tokyo, Nihon shisutemu kaihatsu kenkyujo (Japanese Institute of Systems Development), 1988, p.143-154, In Japanese.

Snow retention, Snow disposal, Snow removal, Snowmelt, Water reserves, Regional planning, Economic development, Cost analysis, Japan

50-2281

Current status and trends in countermeasures against snow and cold on highways. [Kosoku doro no sekkan taisaku no genjo to hoko]

Murakuni, M., Kokusetsu risetsu gijutsu kenkyu 1988 (Research on technology for conquering and exploiting snow, 1988), Tokyo, Nihon shisutemu kaihatsu kenkyujo (Japanese Institute of Systems Development), 1988, p.159-169, In Japanese.

Road icing, Snow removal, Chemical ice prevention, Snow fences, Snowsheds, Road maintenance, Highway planning, Japan

50-2282

Snow countermeasures on metropolitan expressways—applying the experience from the blizzard of '84. [Shuto kosoku doro no yuki taisaku—Showa 59-nen iko no "gosetsu" taiken o fumaete]

Ishizawa, M., Yoshizawa, I., Kokusetsu risetsu gijutsu kenkyu 1988 (Research on technology for conquering and exploiting snow, 1988), Tokyo, Nihon shisutemu kaihatsu kenkyujo (Japanese Institute of Systems Development), 1988, p.170-185, In Japanese.

Snowstorms, Snow removal, Artificial melting, Road maintenance, Highway planning, Urban planning, Japan—Tokyo

50-2283

Test results and trends in the adoption of new technology for road snow melting. [Doro yusetsu shiken no seika to shin gijutsu saitaku no hoko]

Sato, I., Kokusetsu risetsu gijutsu kenkyu 1988 (Research on technology for conquering and exploiting snow, 1988), Tokyo, Nihon shisutemu kaihatsu kenkyujo (Japanese Institute of Systems Development), 1988, p.186-191, In Japanese.

Snow removal, Snow melting, Artificial melting, Road maintenance

50-2284

Current status and problems of countermeasures against snow and cold for oil storage tanks. [Sekiyu bichiku oirutanku no yuki samusa taisaku no genjo to kadai]

Toyama, S., Kokusetsu risetsu gijutsu kenkyu 1988 (Research on technology for conquering and exploiting snow, 1988), Tokyo, Nihon shisutemu kaihatsu kenkyujo (Japanese Institute of Systems Development), 1988, p.192-196, In Japanese.

Oil storage, Storage tanks, Snow removal, Ice prevention, Cold weather operation, Japan

50-2285

Proof test results for the development of practical application of snowmelt water resources from aquifers in fissures. [Kiretsu taisuiso o katsuyo shita yusetsu suigen kaihatsu no tame no jissho shiken seika ni tsuite]

Kimura, S., Kokusetsu risetsu gijutsu kenkyu 1988 (Research on technology for conquering and exploiting snow, 1988), Tokyo, Nihon shisutemu kaihatsu kenkyujo (Japanese Institute of Systems Development), 1988, p.197-200, In Japanese.

Snowmelt, Snow composition, Ground water, Wells, Water chemistry, Water reserves

50-2286

Current status and prospects of snow countermeasures in Nagaoka New Town. [Nagaoka nyu taun no yuki taisaku no genkyo to kongo tedate]

Komine, M., Kokusetsu risetsu gijutsu kenkyu 1988 (Research on technology for conquering and exploiting snow, 1988), Tokyo, Nihon shisutemu kaihatsu kenkyujo (Japanese Institute of Systems Development), 1988, p.211-216, In Japanese.

Snow removal, Artificial melting, Urban planning, Japan

50-2287

Progress report on experimental projects for snowproof housing. [Kosetsu jutaku jikken jigyo no keika hokoku]

Takayama, Y., Kokusetsu risetsu gijutsu kenkyu 1988 (Research on technology for conquering and exploiting snow, 1988), Tokyo, Nihon shisutemu kaihatsu kenkyujo (Japanese Institute of Systems Development), 1988, p.217-222, In Japanese.

Houses, Roofs, Snow removal, Artificial melting, Cold weather construction, Japan

50-2288

Introduction to the exhibits of the 5th National Exhibition of Technology for Conquering and Exploiting Snow. [Dai 5-kai Kokusetsu risetsu gijutsu zenkoku hakurankai shutten gijutsu no shokai], Kokusetsu risetsu gijutsu kenkyu 1988 (Research on technology for conquering and exploiting snow, 1988), Tokyo, Nihon shisutemu kaihatsu kenkyujo (Japanese Institute of Systems Development), 1988, p.225-276, In Japanese.

Snow removal, Snow removal equipment, Snow melting, Artificial melting, Snow fences, Snowsheds, Heat pipes, Heat pumps, Road maintenance, Cold weather construction, Economic development, Japan

50-2289

Technology assessment on systems for conquering and exploiting snow. [Kokusetsu risetsu shisutemu ni kansuru tekunoroji asesumento], Tokyo, Nihon shisutemu kaihatsu kenkyujo (Japanese Institute of Systems Development), 1987, 193p., In Japanese.

DLC TD868.K65 1987 Orien Japan

Snowstorms, Snowfall, Snow removal, Snow removal equipment, Artificial melting, Road maintenance, Highway planning, Regional planning, Cold weather operation, Economic development, Accidents, Cost analysis, Japan

50-2290

Natural resources of Inner Mongolia. [Nei Menggu guotu ziyuan]

Eer, D., ed, Hohhot, Mongolia, Nei Menggu renmin chubanshe (Inner Mongolia People's Publishing House), 1987, 1444p., In Chinese.

DLC HC428.I58N442 Orien China

Natural resources, Regional planning, Economic development, Land development, Steppes, Deserts, Mining, Petroleum industry, Forestry, Agriculture, Manufacturing, Cost analysis, China—Inner Mongolia

50-2291

Research report on snowproofing of houses. [Yuki ni tsuyoi jutaku zukuri kenkyu chosa hokokusho]

Uchida, Y., ed, Toyama, Toyama-ken yuki ni tsuyoi jutaku zukuri chosa kenkyu iinkai (Toyama Prefecture Commission for Research on Snowproofing of Houses), 1984, 426p., In Japanese. Footnotes passim.

DLC TH895.Y85 1984 Orien Japan

Houses, Residential buildings, Roofs, Wooden structures, Snow loads, Snow removal, Cold weather construction, Weatherproofing, Building codes, Design criteria, Cost analysis, Japan

50-2292

Lakes and marshes in Hokkaido. [Hokkaido no kosho]

Sakata, Y., ed, et al, Sapporo, Hokkaido kogai boshi kenkyujo (Hokkaido Research Institute for Environmental Pollution), 1990, 445p., In Japanese. Refs. p.431-444.

DLC QH188.H64 1987 Orien Japan

Lakes, Salt lakes, Hydrography, Limnology, Nutrient cycle, Hydrogeochemistry, Lake water, Water chemistry, Water pollution, Japan—Hokkaido

50-2293

Snowproof houses Plan 50. [Yuki ni tsuyoi jutaku puran 50], Toyama, Toyama-ken Dobokubu (Toyama Prefecture Department of Civil Engineering), 1986, 127p., In Japanese.

DLC TH895.Y84 1986 Orien Japan

Houses, Roofs, Ventilation, Weatherproofing, Snow loads, Cold weather construction, Japan

50-2294

Tracks of forest roads in the privately owned forests of Hokkaido. [Hokkaido minyurin rindo no kiseki], Sapporo, Hokkaido rindo kyokai (Hokkaido Forest Road Association), 1990, 462p., In Japanese. Refs. p.299-301.

DLC SD389.H65 1990 Orien Japan

Forest land, Forestry, Highway planning, Road maintenance, Regional planning, Land development, Economic development, Cost analysis, History, Japan—Hokkaido

50-2295

Principal mineral resources and their distribution on the Qinghai-Xizang Plateau. [Qingzang gaoyuan zhuyao kuangchan ji qi fenbu guilu]

Xu, Z.Y., Chen, F.Z., Zheng, Y.Z., Zeng, X.W., Zhonghua renmin gongheguo Dizhi kuangchanbu dizhi zhuanbao (China. Ministry of Geology and Mineral Resources. Geological memoirs), Series 4, No.20, Beijing, Dizhi chubanshe (Geological Publishing House), 1991, 287p., In Chinese with English summary and table of contents. 29 refs.

DLC QE382.C6C45 1992 Orien China

Geological surveys, Exploration, Natural resources, Minerals, Crude oil, Natural gas, Coal, Geothermal prospecting, Salt lakes, Tectonics, Stratigraphy, Geochemistry, China—Qinghai-Xizang Plateau

50-2296

Rangelands of Xizang (Tibet). [Xizang caoyuan]

Mou, X.D., et al, Zhongguo kexueyuan Qingzang gaoyuan zonghe kaochadui. Qingzang gaoyuan kexue kaocha congshu (Chinese Academy of Sciences. Qinghai-Xizang Plateau Comprehensive Scientific Survey Team. Series of the Expedition to the Qinghai-Xizang Plateau), Beijing, Kexue chubanshe (Science Press), 1992, 146p. + plates, In Chinese with English table of contents. 41 refs. Edited by Zhongguo nongye kexueyuan Caoyuan yanjiusuo (Chinese Academy of Agricultural Sciences. Institute of Grasslands).

DLC QH541.5.P7H75 1992 Orien China

Soil surveys, Soil classification, Regional planning, Land development, Agriculture, Grazing, Grasses, Vegetation patterns, Plant ecology, Introduced plants, China—Xizang

50-2297

Soils of Xizang (Tibet). [Xizang turang]

Gao, Y.X., Chen, H.Z., Wu, Z.D., Sun, H.L., Li, M.S., Zhongguo kexueyuan Qingzang gaoyuan zonghe kaochadui. Qingzang gaoyuan kexue kaocha congshu (Chinese Academy of Sciences. Qinghai-Xizang Plateau Comprehensive Scientific Survey Team. Series of the Expedition to the Qinghai-Xizang Plateau), Beijing, Kexue chubanshe (Science Press), 1985, 318p. + plates, In Chinese with English table of contents. Refs. passim.

DLC QE294.H698 1985 Orien China

Soil surveys, Mountain soils, Desert soils, Cryogenic soils, Soil classification, Soil formation, Soil composition, Vegetation patterns, Plant ecology, China—Xizang

50-2298

Fuzzy-controller for flow and mixture regulation in an aircraft deicing vehicle.

Knappe, H., IEEE International Conference on Fuzzy Systems, 2nd, San Francisco, CA, Mar. 28-Apr. 1, 1993. Vol.1, New York, Institute of Electrical and Electronics Engineers, 1993, p.207-212, 7 refs.

DLC TJ212.2.I3249 1993

Aircraft icing, Chemical ice prevention, Flow control, Computerized simulation

50-2299

Geocryological studies in arctic regions, Vol. 5: Poster papers. [Geokriologicheskie issledovaniia v arkticheskikh raĭonakh, Vypusk 5: Stendovye doklady]

Geokriologicheskie issledovaniia v arkticheskikh raĭonakh; mezhdunarodnyĭ simpozium, SSSR, IAmburg, Avgust 1989 (Geocryological Studies in Arctic Regions: International Symposium. USSR, Yamburg, August 1989), Mel'nikov, V.P., ed, Solov'eva, L.N., ed, Tiumen', AN SSSR, 1990, 73p., In Russian. Refs. passim. For individual papers see 50-2300 through 50-2307.

Geocryology, Engineering geology, Frozen ground compression, Compressive properties, Deformation

50-2300

Forecasting deformation properties of thawing sandy soils according to data from compression tests. [Prognoz deformatsionnykh svoĭstv ottaivaiushchikh peschanykh gruntov po dannym kompressionnykh ispytaniĭ]

Gerasimov, A.S., Zolotar', A.I., Sheĭnkman, D.R., Geokriologicheskie issledovaniia v arkticheskikh raĭonakh; Mezhdunarodnyĭ simpozium, SSSR, IAmburg, avgust 1989; Vyp. 5: Stenovye doklady (Geocryological studies in arctic regions; International Symposium, USSR, Yamburg, August 1989; Vol. 5: Poster reports). Edited by V.P. Mel'nikov and L.N. Solov'eva, Tiumen', AN SSSR, 1989, p.3-10, In Russian. 7 refs.

Deformation, Sands, Ground thawing, Compressive properties, Frozen ground compression, Forecasting, Analysis (mathematics)

50-2301

Pollution of natural ice in the Arctic and its indications. [Zagriaznenie prirodnykh l'dov Arktiki i ego indikatsiia]

Ivanov, A.V., Geokriologicheskie issledovaniia v arkticheskikh raĭonakh; Mezhdunarodnyĭ simpozium, SSSR, IAmburg, avgust 1989; Vyp. 5: Stenovye doklady (Geocryological studies in arctic regions; International Symposium, USSR, Yamburg, August 1989; Vol. 5: Poster reports). Edited by V.P. Mel'nikov and L.N. Solov'eva, Tiumen', AN SSSR, 1989, p.11-22, In Russian. 40 refs.

Impurities, Pollution, Environmental impact, Aerosols, Snow impurities, Glaciers, Sea ice, River ice

50-2302

Improving foundations in permafrost (in the example of the Noril'sk industrial region). [Sovershenstvovanie fundamentov v mnogoletnemerzlykh gruntakh (na primere Noril'skogo promyshlennogo raĭona)]

Rastegaev, I.K., Khlopuk, L.IU., Baksheev, D.S., Latyshev, V.V., Mekhanik, V.P., Geokriologicheskie issledovaniia v arkticheskikh raĭonakh; Mezhdunarodnyĭ simpozium, SSSR, IAmburg, avgust 1989; Vyp. 5: Stenovye doklady (Geocryological studies in arctic regions; International Symposium, USSR, Yamburg, August 1989; Vol. 5: Poster reports). Edited by V.P. Mel'nikov and L.N. Solov'eva, Tiumen', AN SSSR, 1989, p.23-30, In Russian. 11 refs.

Foundations, Permafrost bases, Permafrost beneath structures, Cold weather construction, Ground thawing, Russia—Noril'sk

50-2303

Electrical sounding of the cryolithozone in the Arctic using transient processes. [Elektrozondirovanie kriolitozony Arktiki metodom perekhodnykh protsessov]

Nim, IU.A., Geokriologicheskie issledovaniia v arkticheskikh raĭonakh; Mezhdunarodnyĭ simpozium, SSSR, IAmburg, avgust 1989; Vyp. 5: Stenovye doklady (Geocryological studies in arctic regions; International Symposium, USSR, Yamburg, August 1989; Vol. 5: Poster reports). Edited by V.P. Mel'nikov and L.N. Solov'eva, Tiumen', AN SSSR, 1989, p.31-39, In Russian. 7 refs.

Mapping, Sounding, Geocryology, Geoelectricity, Electric fields, Mathematical models, Electromagnetic prospecting

50-2304

Models in engineering geocryology and their use in the organization of scientific studies. [Modeli znaniĭ v inzhenernoĭ geokriologii i ikh primenenie dlia organizatsii nauchnykh issledovaniĭ]

Levkovich, V.R., Linkov, A.S., Geokriologicheskie issledovaniia v arkticheskikh raĭonakh; Mezhdunarodnyĭ simpozium, SSSR, IAmburg, avgust 1989; Vyp. 5: Stenovye doklady (Geocryological studies in arctic regions; International Symposium, USSR, Yamburg, August 1989; Vol. 5: Poster reports). Edited by V.P. Mel'nikov and L.N. Solov'eva, Tiumen', AN SSSR, 1989, p.40-46, In Russian.

Engineering geology, Geocryology, Models, Computerized simulation

50-2305

Problems in improving the reliability of geotechnology and their systematic analysis. [Problemy povysheniia nadezhnosti geotekhnologiĭ i ikh analiz s ispol'zovaniem intelektual'nykh sistem]

Linkov, A.S., Geokriologicheskie issledovaniia v arkticheskikh raĭonakh; Mezhdunarodnyĭ simpozium, SSSR, IAmburg, avgust 1989; Vyp. 5: Stenovye doklady (Geocryological studies in arctic regions; International Symposium, USSR, Yamburg, August 1989; Vol. 5: Poster reports). Edited by V.P. Mel'nikov and L.N. Solov'eva, Tiumen', AN SSSR, 1989, p.47-54, In Russian.

Engineering geology, Geocryology, Models, Theories

50-2306

Integrating an electromagnetic system and the prospects for its use in electrometry of the cryolithozone. [Sovmeshchennye elektromagnitnye systemy i perspektivy ikh primeneniia v elektrometrii kriolitozony]

Badalov, V.D., Snegirev, A.M., Geokriologicheskie issledovaniia v arkticheskikh raĭonakh; Mezhdunarodnyĭ simpozium, SSSR, IAmburg, avgust 1989; Vyp. 5: Stenovye doklady (Geocryological studies in arctic regions; International Symposium, USSR, Yamburg, August 1989; Vol. 5: Poster reports). Edited by V.P. Mel'nikov and L.N. Solov'eva, Tiumen', AN SSSR, 1989, p.55-66, In Russian. 9 refs.

Geocryology, Electromagnetic prospecting, Analysis (mathematics)

50-2307

Compressibility of saline frozen ground on the Yamal Peninsula. [Szhimaemost' zasolennykh merzlykh gruntov poluostrova IAmal]

Morkovkin, E.IU., Aksenov, V.I., Geokriologicheskie issledovaniia v arkticheskikh raĭonakh; Mezhdunarodnyĭ simpozium, SSSR, IAmburg, avgust 1989; Vyp. 5: Stenovye doklady (Geocryological studies in arctic regions; International Symposium, USSR, Yamburg, August 1989; Vol. 5: Poster reports). Edited by V.P. Mel'nikov and L.N. Solov'eva, Tiumen', AN SSSR, 1989, p.67-73, In Russian. 7 refs.

Frozen ground compression, Compressive properties, Saline soils, Deformation, Soil stabilization, Russia—Yamal Peninsula

50-2308

Concepts for frost design for upgraded runway at CONUS Base 18.

Johnson, T.C., MP 3733, U.S. Army Cold Regions Research and Engineering Laboratory, May 1984, 17p.

Runways, Pavement bases, Subgrade soils, Cold weather performance, Frost resistance, Frost action, Design criteria, Drainage, Standards

The author examined airfield pavements, conferred with engineering and operations personnel at the base, and reviewed previous design reports, as-built drawings, condition survey reports and pavement evaluation reports, including a report on a pavement evaluation conducted in 1983. Results of test pits and laboratory soil tests conducted within the past month for USAED Seattle were also reviewed. Based on information from all these sources, the existing pavements of principal interest and pertinent soil, drainage and climatic conditions at the site were described, in an evaluation of frost resistance design criteria.

50-2309

Accelerator mass spectrometry: new applications.

Synal, H.A., *Applied radiation and isotopes,* June-July 1995, 46(6-7), International Symposium on Radiation Physics, 6th, Rabat, Morocco, 1995. Proceedings, p.457-466, 44 refs.

Ice spectroscopy, Radiation absorption, Radioactive isotopes, Isotope analysis, Ice cores, Geochemistry, Ice dating, Radioactive age determination, Solar radiation, Solar activity, Greenland—Summit

50-2310

Predictive model of frost heave and thaw weakening.

Guymon, G.L., Berg, R.L., Chamberlain, E., MP 3734, Transportation Research Board, Annual Meeting, 1986. Paper, 1986, 17p., 12 refs.

Road maintenance, Pavement bases, Deformation, Soil freezing, Frost heave, Frost forecasting, Thaw weakening, Thaw consolidation, Frost penetration, Mechanical tests, Mathematical models

A dynamic mathematical model to compute frost heave, frost and thaw penetration, pore water pressure (or tension), and temperatures with depth and time was developed in a cooperative study between the Federal Highway Administration, the Federal Aviation Administration and the U.S. Army Corps of Engineers. Application of the model to field and laboratory tests is discussed. Results from the model compare favorably with measurements made in the laboratory and in the field. A silty sand is used in all of the examples. It is one of eight soils to which the model has been applied. Field data indicated a maximum frost heave of about 9 cm and the model estimated a similar amount. Maximum frost depth measured in the field was about 0.77 m while the model estimated a frost depth of about 0.60 m. Maximum resilient pavement deflection computed using output from the model was about 1.4 mm compared to an observed maximum of approximately the same amount.

50-2311

Proceedings.

Colloquium on Frost Heave Testing and Research, Nottingham, England, May 18, 1977, Jones, R.H., ed, University of Nottingham, July 1977, 141p., Refs passim. For individual papers see 50-2312 through 50-2327.

Road maintenance, Subgrade soils, Soil aggregates, Frost action, Frost heave, Frost resistance, Soil tests, Mechanical tests, Frozen ground expansion, Laboratory techniques, Ice solid interface, Soil pressure, Soil water migration, Soil physics, Standards, Accuracy

50-2312

Frost heave research at the University of Nottingham.

Jones, R.H., Colloquium on Frost Heave Testing and Research, Nottingham, England, May 18, 1977. Proceedings. Edited by R.H. Jones, University of Nottingham, July 1977, p.1-10, 15 refs.

Road maintenance, Frost heave, Damage, Research projects, Mechanical tests, Frozen ground mechanics, Frost resistance, Subgrade soils, Soil aggregates, Capillarity, Design

50-2313

Preliminary assessment of design and performance of frost susceptibility testing facilities.

Dudek, S., Colloquium on Frost Heave Testing and Research, Nottingham, England, May 18, 1977. Proceedings. Edited by R.H. Jones, University of Nottingham, July 1977, p.13-21, 4 refs.

Road maintenance, Research projects, Soil freezing, Artificial freezing, Soil tests, Frost heave, Cold chambers, Test chambers, Test equipment, Refrigeration, Design, Laboratory techniques

50-2314

Testing facilities—self refrigerating units. Frost cabinet temperature distribution.

Hill, J., Colloquium on Frost Heave Testing and Research, Nottingham, England, May 18, 1977. Proceedings. Edited by R.H. Jones, University of Nottingham, July 1977, p.23-27.

Test equipment, Refrigeration, Artificial freezing, Soil freezing, Road maintenance, Frost heave, Simulation, Performance, Cold chambers, Design, Temperature distribution

50-2315

Frost heave—testing facilities.

Kettle, R.J., Colloquium on Frost Heave Testing and Research, Nottingham, England, May 18, 1977. Proceedings. Edited by R.H. Jones, University of Nottingham, July 1977, p.29-37, 11 refs.

Soil tests, Frost heave, Soil freezing, Cold chambers, Test equipment, Frozen ground mechanics, Performance, Design, Standards, Accuracy

50-2316

Grading, degradation and compaction considerations in relation to specimen preparation.

Hughes, R., Colloquium on Frost Heave Testing and Research, Nottingham, England, May 18, 1977. Proceedings. Edited by R.H. Jones, University of Nottingham, July 1977, p.39-47, 9 refs.

Soil tests, Road maintenance, Soil aggregates, Frost heave, Sampling, Classifications, Accuracy, Soil compaction, Particle size distribution, Degradation, Specifications

50-2317
Frost-heave test as a compliance requirement.
Sherwood, P.T., Colloquium on Frost Heave Testing and Research, Nottingham, England, May 18, 1977. Proceedings. Edited by R.H. Jones, University of Nottingham, July 1977, p.49-52, 1 ref.
Road maintenance, Frost heave, Mechanical tests, Standards, Soil aggregates, Soil compaction, Soil classification, Accuracy, Classifications

50-2318
Effect of mode of compaction on frost heave.
Burns, J., Colloquium on Frost Heave Testing and Research, Nottingham, England, May 18, 1977. Proceedings. Edited by R.H. Jones, University of Nottingham, July 1977, p.53-55.
Road maintenance, Soil tests, Soil physics, Soil aggregates, Frost heave, Soil compaction, Standards, Sampling

50-2319
Inherent variability of frost heave specimens.
Nicholls, R.A., Colloquium on Frost Heave Testing and Research, Nottingham, England, May 18, 1977. Proceedings. Edited by R.H. Jones, University of Nottingham, July 1977, p.57-58.
Road maintenance, Soil tests, Subgrade soils, Frost heave, Sampling, Physical properties, Standards, Accuracy

50-2320
Aggregate degradation in the frost heave test.
Hill, J., Colloquium on Frost Heave Testing and Research, Nottingham, England, May 18, 1977. Proceedings. Edited by R.H. Jones, University of Nottingham, July 1977, p.59-64.
Road maintenance, Frost heave, Soil aggregates, Soil tests, Classifications, Soil compaction, Sampling, Degradation, Standards

50-2321
Degradation during compaction of test specimens compared with variations in grading induced by sample reduction.
Pike, D.C., Colloquium on Frost Heave Testing and Research, Nottingham, England, May 18, 1977. Proceedings. Edited by R.H. Jones, University of Nottingham, July 1977, p.65-69, 4 refs.
Road maintenance, Soil tests, Frost heave, Frost resistance, Soil compaction, Soil aggregates, Degradation, Classifications, Pavement bases, Standards, Accuracy

50-2322
Development of a quantitative model of frost heave.
Holden, J.T., Colloquium on Frost Heave Testing and Research, Nottingham, England, May 18, 1977. Proceedings. Edited by R.H. Jones, University of Nottingham, July 1977, p.87-93, 7 refs.
Road maintenance, Frozen ground mechanics, Frost heave, Frost penetration, Phase transformations, Stefan problem, Heat flux, Ice water interface, Freezing front, Mathematical models

50-2323
Effects of the variation in suction and heat flow during the frost heaving process.
Jones, R.H., Colloquium on Frost Heave Testing and Research, Nottingham, England, May 18, 1977. Proceedings. Edited by R.H. Jones, University of Nottingham, July 1977, p.95-102, 11 refs.
Soil freezing, Frost heave, Frost penetration, Soil water migration, Water pressure, Heat flux, Ice water interface, Freezing front, Capillarity, Mathematical models

50-2324
Heaving pressures and frost heave.
Kettle, R.J., Colloquium on Frost Heave Testing and Research, Nottingham, England, May 18, 1977. Proceedings. Edited by R.H. Jones, University of Nottingham, July 1977, p.103-114, Includes discussion. 15 refs.
Soil tests, Pavement bases, Soil aggregates, Soil physics, Frozen ground expansion, Frost heave, Frost resistance, Soil pressure

50-2325
Calculation of water transport in the LR 90 test.
Onalp, A., Colloquium on Frost Heave Testing and Research, Nottingham, England, May 18, 1977. Proceedings. Edited by R.H. Jones, University of Nottingham, July 1977, p.115-126, 7 refs.
Soil tests, Frozen ground mechanics, Subgrade soils, Soil aggregates, Soil freezing, Frost heave, Frost penetration, Soil water migration, Water transport, Freezing front, Ice water interface, Water pressure

50-2326
Effect of water-table position on frost heave.
Burns, J., Colloquium on Frost Heave Testing and Research, Nottingham, England, May 18, 1977. Proceedings. Edited by R.H. Jones, University of Nottingham, July 1977, p.127-131.
Pavement bases, Road maintenance, Soil physics, Soil tests, Subgrade soils, Frost heave, Soil water migration, Water table, Water level, Frost penetration, Correlation

50-2327
Indirect assessment of frost susceptibility.
Hurt, K.G., Colloquium on Frost Heave Testing and Research, Nottingham, England, May 18, 1977. Proceedings. Edited by R.H. Jones, University of Nottingham, July 1977, p.133-138, 7 refs.
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Sediments, Soil pollution, Soil chemistry, Water pollution, Water chemistry, Chemical analysis, Explosives, Environmental impact, United States—Alaska—Eagle River Flats
A simple field screening method to detect white phosphorus particles in sediment is described. A thin layer of wet sediment is heated until all water evaporates. The presence of white phosphorus is indicated by visual detection of the inflammation of white phosphorus particles that occurs at relatively low temperatures (less than 40°C) once a protective layer of water is removed. The field screening method consistently gave positive results for samples where solvent extraction followed by gas chromatography indicated white phosphorus concentrations above 1 microg/g. A more sophisticated method, based on solid-phase microextraction and gas chromotography determination, was also tested. Concentrations less than 1 microg/kg were detectable.

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Chemical ice prevention, Countermeasures, Vehicles

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New radiochemical procedures for environmental actinide measurements and data quality control.
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Environmental impact, Radioactivity, Limnology, Snow composition, Marine biology, Measurement, Antarctica—Terra Nova Bay
Plutonium and ^{90}Sr were measured in Mediterranean Sea samples and in environmental samples collected in Antarctica. Some interesting sea-sediment profiles were also obtained. All the chemical methods were verified by adding some yield tracers (^{232}U, ^{228}Th, ^{242}Pu); analyzing some certified samples supplied by IAEA and NIST; participating in some international intercomparison runs; using, when possible, both an analytical and a radiometric method; and following the radioactivity decay or growth (^{90}Y and ^{226}Ra). (Auth. mod.)

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50-2359

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Geological surveys, Exploration, Minerals, Metals, Gold, Magma, Lithology, Geochemistry, Tectonics, China—Xinjiang

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50-2368

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Geological surveys, Exploration, Minerals, Lithology, Diagenesis, Isotope analysis, Geochemistry, Geochronology, China—Xinjiang

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Geological surveys, Exploration, Minerals, Lithology, Geochemistry, Geochronology, China—Xinjiang

50-2370

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Geological surveys, Geologic structures, Lithology, Minerals, Geochemistry, Tectonics, Geochronology, China—Xinjiang

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Geological surveys, Exploration, Minerals, Gold, Lithology, Magma, Geochemistry, Tectonics, Geochronology, China—Xinjiang

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Geological surveys, Exploration, Minerals, Metals, Lithology, Geochemistry, Tectonics, Geochronology, China—Xinjiang

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Geological surveys, Exploration, Minerals, Metals, Lithology, Geochemistry, Tectonics, Geochronology, China—Xinjiang

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Analysis on structural metallogenic mechanism of Cu polymetallic tectono-metallogenic series in the foreland of Altay.
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Characteristics of mafic intrusive body bearing Cu-Ni mineralization in southern Karatongki District, Xinjiang.
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Geological surveys, Exploration, Minerals, Metals, Lithology, Magma, Geochemistry, Tectonics, Geochronology, China—Xinjiang

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Overlapping mineralization of Karatongki Cu-Ni deposit.
Zhan, X.Z., Xinjiang beibu guti diqiu kexue xin jinzhan (New advances in solid earth sciences in northern Xinjiang). Edited by G.Z. Tu, Beijing, Kexue chubanshe (Science Press), 1993, p.377-387, In Chinese. 3 refs.

Geological surveys, Exploration, Minerals, Metals, Lithology, Magma, Geochemistry, Tectonics, Geochronology, China—Xinjiang

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Stable isotopic character of mineralization of some deposits in northern Xinjiang.
Zhang, G.X., Hu, A.Q., Li, Q.X., Zhang, Q.F., Fan, S.K., Xinjiang beibu guti diqiu kexue xin jinzhan (New advances in solid earth sciences in northern Xinjiang). Edited by G.Z. Tu, Beijing, Kexue chubanshe (Science Press), 1993, p.389-401, In Chinese. 4 refs.

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Geological surveys, Exploration, Minerals, Lithology, Geochemistry, Tectonics, Geochronology, China—Xinjiang

50-2380

Study of remote sensing information abstraction for ore-bearing geological body and registration method for multisource.

Guo, H.D., Dong, P.L., Li, L., Wang, J.D., Xinjiang beibu guti diqiu kexue xin jinzhan (New advances in solid earth sciences in northern Xinjiang). Edited by G.Z. Tu, Beijing, Kexue chubanshe (Science Press), 1993, p.421-437, In Chinese. 4 refs.

Geological surveys, Geophysical surveys, Exploration, Minerals, Lithology, Geochemistry, Geologic structures, Terrain identification, Spaceborne photography, Data processing, Image processing

50-2381

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Zhang, S.Z., Liu, Y.L., Ren, G.T., Wang, M.L., Xinjiang beibu guti diqiu kexue xin jinzhan (New advances in solid earth sciences in northern Xinjiang). Edited by G.Z. Tu, Beijing, Kexue chubanshe (Science Press), 1993, p.439-456, In Chinese. 2 refs.

Geological surveys, Geophysical surveys, Exploration, Minerals, Lithology, Geochemistry, Electromagnetic prospecting

50-2382

Muon μ-particle: a new technique for mineral exploration.

Zhou, D.Z., Xinjiang beibu guti diqiu kexue xin jinzhan (New advances in solid earth sciences in northern Xinjiang). Edited by G.Z. Tu, Beijing, Kexue chubanshe (Science Press), 1993, p.457-477, In Chinese. 80 refs.

Geological surveys, Geophysical surveys, Exploration, Minerals, Lithology, Geochemistry, Gamma irradiation, Radiation measurement

50-2383

Integrated new generation geophysical model of Karatongki ore-bearing rock body and its application.

Zhang, S.Z., Liu, Y.L., Ren, G.T., Shi, K.F., Xinjiang beibu guti diqiu kexue xin jinzhan (New advances in solid earth sciences in northern Xinjiang). Edited by G.Z. Tu, Beijing, Kexue chubanshe (Science Press), 1993, p.479-492, In Chinese.

Geological surveys, Geophysical surveys, Exploration, Minerals, Lithology, Geochemistry, China—Xinjiang

50-2384

Remote sensing for mineral exploration in northern Xinjiang.

Guo, H.D., Lin, S.D., Lin, Q.Z., Wang, Z.G., Xinjiang beibu guti diqiu kexue xin jinzhan (New advances in solid earth sciences in northern Xinjiang). Edited by G.Z. Tu, Beijing, Kexue chubanshe (Science Press), 1993, p.493-507, In Chinese. 6 refs.

Geological surveys, Geophysical surveys, Exploration, Minerals, Gold, Lithology, Geochemistry, Spaceborne photography, China—Xinjiang

50-2385

Application of NOAA/AVHRR data to linear tectonics in boundary area of Sino-Kazakhstan-Mongolia.

Yang, D.C., Guo, H.D., Xinjiang beibu guti diqiu kexue xin jinzhan (New advances in solid earth sciences in northern Xinjiang). Edited by G.Z. Tu, Beijing, Kexue chubanshe (Science Press), 1993, p.509-521, In Chinese. 5 refs.

Geological surveys, Geophysical surveys, Exploration, Minerals, Geochemistry, Tectonics, Terrain identification, Spaceborne photography, China—Xinjiang

50-2386

New improvement of mathematical geology applying in gold mineralization.

Shen, B.M., Shen, Y.C., Xinjiang beibu guti diqiu kexue xin jinzhan (New advances in solid earth sciences in northern Xinjiang). Edited by G.Z. Tu, Beijing, Kexue chubanshe (Science Press), 1993, p.523-536, In Chinese. 3 refs.

Geological surveys, Geophysical surveys, Exploration, Minerals, Gold, Geochemistry

50-2387

Application of induced telluric method and high accurate magnetic survey method for gold exploration.

Shi, K.F., An, Z.C., Zhang, S.Z., Xinjiang beibu guti diqiu kexue xin jinzhan (New advances in solid earth sciences in northern Xinjiang). Edited by G.Z. Tu, Beijing, Kexue chubanshe (Science Press), 1993, p.537-546, In Chinese. 3 refs.

Geological surveys, Geophysical surveys, Exploration, Minerals, Gold, Lithology, Geochemistry, Electromagnetic prospecting, Magnetic surveys, China—Xinjiang

50-2388

Linear least squares method for time series analysis with an application to a methane time series.

Khalil, M.A.K., Moraes, F.P., *Air and Waste Management Association. Journal,* Jan. 1995, Vol.45, p.62-63, 4 refs.

Paleoclimatology, Ice cores, Ice composition, Analysis (mathematics), Antarctica—Vostok Station

A simple method of time series analysis, based upon linear least squares curve fitting, is developed. The method's advantages and disadvantages are discussed, and an example is presented using the Vostok Core methane record. (Auth.)

50-2389

Windshield wiping device for automobiles. [Vorrichtung zum Wischen von Scheiben an Kraftfahrzeugen]

Kühbauch, G., *European Patent Office. Patent,* Jan. 8, 1993, 6p., EP 0 553 616 A1.

Design, Equipment, Ice removal, Motor vehicles, Countermeasures

50-2390

Efficiency of steam and hot water heat distribution systems.

Phetteplace, G., CR 95-18, *U.S. Army Cold Regions Research and Engineering Laboratory. Report,* Sep. 1995, 24p., ADA-302 238, 21 refs.

Heating, Steam, Heat loss, Heat pipes, Underground pipelines, Cost analysis

This report will provide some general guidance on the selection of distribution medium (steam or hot water) and temperature for heat distribution systems. The report discusses the efficiency of both steam and hot water heat distribution systems in more detail. The results of several field studies using data from boiler plant logs and measured heat losses are given. For steam, an efficiency analysis for the steam heat distribution system at Hawthorne Army Ammunition Plant is summarized. This analysis is based on the limited data available from the boiler logs maintained at the central plant. From this information, along with energy and mass balances that are constructed from the central plant data, gross measures of efficiency are obtained. The results of the analysis show that only 43.5% of the steam input to the distribution system is used to meet the required space heating load. The results also indicate that on average only 46.2% of the steam that leaves the plant returns as condensate. By converting this steam distribution system to a low temperature hot water heat distribution system, savings would exceed $292,000 for the 181-day study period, which represents a typical heating season. For hot water based systems this report describes two field projects underway at U.S. Army bases, at Fort Jackson, SC and Ft. Irwin, CA.

50-2391

Proceedings.

International Symposium on Biogeochemistry of Seasonally Snow-covered Catchments, Boulder, CO, July 1-14, 1995, Tonnessen, K.A., ed, Williams, M.W., ed, Tranter, M., ed, International Association of Hydrological Sciences. Publication No.228, Great Yarmouth, 1995, 465p., Refs. passim. For individual papers see 50-2392 through 50-2439.

Snow hydrology, Glacial hydrology, Glacier mass balance, Watersheds, Surface drainage, Alpine landscapes, Snowmelt, Glacier melting, Snow cover effect, Hydrogeochemistry, Sampling, Sedimentation, Aerosols, Environmental impact, Simulation

50-2392

Relationship between atmospheric composition and snow composition for HCl and HNO_3.

Dominé, F., Thibert, E., International Association of Hydrological Sciences. Publication No.228 and International Symposium on Biogeochemistry of Seasonally Snow-covered Catchments, Boulder, CO, July 1-14, 1995. Proceedings. Edited by K.A. Tonnessen et al, Great Yarmouth, 1995, p.3-10, 17 refs.

Precipitation (meteorology), Snow composition, Atmospheric composition, Snow air interface, Ice vapor interface, Vapor diffusion, Snow crystal growth, Aerosols, Chemical properties, Solubility, Simulation

50-2393

Can inorganic chemical species volatilize from snow.

Cragin, J.H., McGilvary, R., MP 3735, International Association of Hydrological Sciences. Publication No.228 and International Symposium on Biogeochemistry of Seasonally Snow-covered Catchments, Boulder, CO, July 1-14, 1995. Proceedings. Edited by K.A. Tonnessen et al, Great Yarmouth, 1995, p.11-16, 10 refs.

Snow cover stability, Sampling, Snow physics, Snow composition, Snow impurities, Aerosols, Sublimation, Snow evaporation, Snow air interface, Chemical properties, Ion diffusion, Mass transfer

To determine if reported time-decreasing concentrations of nitrate and sulfate in winter snowpacks could be due to loss of these species through the gas phase, i.e. volatilization, freshly-falling snow was collected and allowed to slowly sublime at -5°C under controlled laboratory conditions. When 20-50% of the original water mass had sublimed, samples were melted and analyzed for chloride, nitrate, and sulfate. In two separate experiments, chloride and nitrate behaved conservatively and were fully recovered while sulfate losses of as much as 38% occurred during a 1-month period. These losses raise questions about the long-term stability of SO_4^{2-} in both temporal and polar snowpacks.

50-2394

Ozone deposition in a snow-covered subalpine spruce-fir forest environment.

Zeller, K., Hehn, T., International Association of Hydrological Sciences. Publication No.228 and International Symposium on Biogeochemistry of Seasonally Snow-covered Catchments, Boulder, CO, July 1-14, 1995. Proceedings. Edited by K.A. Tonnessen et al, Great Yarmouth, 1995, p.17-22, 18 refs.

Forest ecosystems, Forest canopy, Alpine landscapes, Atmospheric composition, Aerosols, Ozone, Fallout, Snow composition, Snow air interface, Snow cover effect, Vapor transfer, Vapor diffusion, Sampling

50-2395

Variation in ambient air nitrogen concentration and total annual atmospheric deposition at Niwot Ridge, Colorado.

Rusch, D., Sievering, H., International Association of Hydrological Sciences. Publication No.228 and International Symposium on Biogeochemistry of Seasonally Snow-covered Catchments, Boulder, CO, July 1-14, 1995. Proceedings. Edited by K.A. Tonnessen et al, Great Yarmouth, 1995, p.23-32, 15 refs.

Tundra terrain, Tundra climate, Forest ecosystems, Nutrient cycle, Atmospheric composition, Chemical properties, Aerosols, Fallout, Air pollution, Periodic variations, Sampling, United States—Colorado—Niwot Ridge

50-2396

Dry depositional loading of nitrogen to an alpine snowpack, Niwot Ridge, Colorado.

Cress, R.G., Williams, M.W., Sievering, H., International Association of Hydrological Sciences. Publication No.228 and International Symposium on Biogeochemistry of Seasonally Snow-covered Catchments, Boulder, CO, July 1-14, 1995. Proceedings. Edited by K.A. Tonnessen et al, Great Yarmouth, 1995, p.33-40, 10 refs.

Alpine landscapes, Forest ecosystems, Atmospheric composition, Aerosols, Air pollution, Fallout, Snow composition, Snow impurities, Chemical properties, Sampling, Environmental tests, Seasonal variations, United States—Colorado—Niwot Ridge

50-2397

Ventilation experiments in a seasonal snow cover.

Albert, M.R., Hardy, J.P., MP 3736, International Association of Hydrological Sciences. Publication No.228 and International Symposium on Biogeochemistry of Seasonally Snow-covered Catchments, Boulder, CO, July 1-14, 1995. Proceedings. Edited by K.A. Tonnessen et al, Great Yarmouth, 1995, p.41-49, 12 refs.

Snow physics, Snow cover, Snow thermal properties, Snow air interface, Snow surface temperature, Ventilation, Vapor diffusion, Air flow, Atmospheric pressure, Heat transfer, Snow permeability

The effects of induced air flow through a layered, seasonal snowpack due to an imposed horizontally varying surface pressure distribution are described. Results of a field experiment show that the thermal signature of air flow through the snow occurred within minutes of imposition of a surface pressure disturbance and became evident over much of the 28-cm deep snowpack. In this low-density snowpack, small pressure variations (less than three Pascals) were sufficient to cause significant air movement in the pack. Numerical heat and mass transfer simulations of the experiment are described. There is good agreement between model calculations and measured snowpack temperatures, which demonstrate diffusion-controlled heat transfer before the onset of air flow, advection-controlled transfer during the ventilation, and return to diffusion-dominated transport after ventilation ceased.

50-2398

Evolution of factors affecting gas transmissivity of snow in the boreal forest.

Hardy, J.P., Davis, R.E., Winston, G.C., MP 3737, International Association of Hydrological Sciences. Publication No.228 and International Symposium on Biogeochemistry of Seasonally Snow-covered Catchments, Boulder, CO, July 1-14, 1995. Proceedings. Edited by K.A. Tonnessen et al, Great Yarmouth, 1995, p.51-59, 14 refs.

Forest ecosystems, Forest canopy, Atmospheric composition, Snow cover stability, Snowmelt, Snow air interface, Soil air interface, Vapor diffusion, Snow permeability, Carbon dioxide, Geochemistry, Seasonal variations

Factors influencing CO_2 transmission from the soil through snow to the atmosphere during the boreal winter and spring were examined. Three boreal forest structures of northern Manitoba were investigated for their influence on snow distribution, snowpack physical properties, and gas transmissivity. The structure of each forest was measured, as was snow depth variability, snowpack physical properties, and CO_2 flux at the snow surface. During February, measured snow surface CO_2 fluxes were at their minimum despite the highly porous and permeable character of the snowpack. Very low soil temperatures and gas production rates were responsible for the low fluxes. In April, measured CO_2 fluxes were higher, but extremely variable in all forests.

50-2399

Seasonal variability in CO_2 transport through snow in a boreal forest.

Winston, G.C., Stephens, B.B., Sundquist, E.T., Hardy, J.P., Davis, R.E., MP 3738, International Association of Hydrological Sciences. Publication No.228 and International Symposium on Biogeochemistry of Seasonally Snow-covered Catchments, Boulder, CO, July 1-14, 1995. Proceedings. Edited by K.A. Tonnessen et al, Great Yarmouth, 1995, p.61-70, 23 refs.

Forest ecosystems, Forest soils, Snow cover stability, Snow air interface, Snow cover effect, Snow physics, Carbon dioxide, Vapor diffusion, Atmospheric composition, Geochemistry, Soil temperature, Seasonal variations

A chamber method was used to measure CO_2 flux at the surface of the snowpack within three ecotypes of a northern boreal forest near Thompson, Manitoba during the winter and spring of 1993-94. Also measured were temperatures and CO_2 concentrations at depth within

the soil. Vertical concentration gradients, which were observed throughout the winter, declined as soil temperatures dropped and quickly increased when soil temperatures rose. The changing gradients may have been caused by changes in both CO_2 production and the diffusive characteristics of the soil and/or snow. CO_2 fluxes occurred at the snow surface at all sites throughout the winter. Fluxes were lowest in mid to late February and highest in April. Channeling by inhomogeneities of the snowpack contributed to a high degree of spatial variability. These inhomogeneities appeared as depth hoar, ice structures, density variations, and the seasonal formation of melt wells and ablation rings.

50-2400

CO_2 flux through a Wyoming seasonal snowpack: diffusional and pressure pumping effects.

Massman, W., Sommerfeld, R., Zeller, K., Hehn, T., Hudnell, L., Rochelle, S., International Association of Hydrological Sciences. Publication No.228 and International Symposium on Biogeochemistry of Seasonally Snow-covered Catchments, Boulder, CO, July 1-14, 1995. Proceedings. Edited by K.A. Tonnessen et al, Great Yarmouth, 1995, p.71-79, 12 refs.

Snow cover stability, Snow physics, Snow air interface, Snow permeability, Snow cover effect, Vapor diffusion, Turbulent diffusion, Carbon dioxide, Atmospheric pressure, Periodic variations, Atmospheric composition, Geochemistry

50-2401

Flow-finger continuity in serial thick-sections in a melting Sierran snowpack.

McGurk, B.J., Marsh, P., International Association of Hydrological Sciences. Publication No.228 and International Symposium on Biogeochemistry of Seasonally Snow-covered Catchments, Boulder, CO, July 1-14, 1995. Proceedings. Edited by K.A. Tonnessen et al, Great Yarmouth, 1995, p.81-88, 16 refs.

Snow cover structure, Snow physics, Stratification, Structural analysis, Snowmelt, Snow hydrology, Water transport, Ice water interface, Photography

50-2402

Development and stability of preferential flow paths in a layered snowpack.

Schneebeli, M., International Association of Hydrological Sciences. Publication No.228 and International Symposium on Biogeochemistry of Seasonally Snow-covered Catchments, Boulder, CO, July 1-14, 1995. Proceedings. Edited by K.A. Tonnessen et al, Great Yarmouth, 1995, p.89-95, 22 refs.

Snow hydrology, Snowmelt, Snow cover stability, Saturation, Water flow, Flow measurement, Seepage, Ice water interface, Metamorphism (snow), Simulation

50-2403

Soil-to-snow movement of synthetic organic compounds in natural snowpack.

Hogan, A., Leggett, D., MP 3739, International Association of Hydrological Sciences. Publication No.228 and International Symposium on Biogeochemistry of Seasonally Snow-covered Catchments, Boulder, CO, July 1-14, 1995. Proceedings. Edited by K.A. Tonnessen et al, Great Yarmouth, 1995, p.97-105, 21 refs.

Soil tests, Snow physics, Snow permeability, Geochemistry, Hydrocarbons, Snow composition, Meltwater, Snow air interface, Soil air interface, Mass transfer, Vapor diffusion, Sampling

Experiments were done to measure the exchange of relatively insoluble organic tracers from soil to snow, and movement of organic tracer compounds in natural snow, using assorted nitroaromatics as tracer species. These compounds are not found in measurable quantity in native soil or snow, and there is little probability of sample contamination in routine sampling and handling. Snow specimens were collected over the tracer sources after 3 to 75 days had elapsed, in snow depths of less than 10 to more than 70 cm. The concentration of the tracer compounds is measured in the sample meltwater. The concentration of organic compounds of slight solubility and vapor pressure less than 10^{-3} mm Hg (DNT, TNT, nitroglycerine) tend to acquire a concentration profile in the overlying snow that is exponential with the distance above the source. The concentration increases with elapsed time in dry snow. Concentration profiles obtained near but not over the source indicate that the tracer material disperses over less distance horizontally than vertically in dry snow.

50-2404

Hydrochemical study of snow meltwater and snow cover.

Suzuki, K., International Association of Hydrological Sciences. Publication No.228 and International Symposium on Biogeochemistry of Seasonally Snow-covered Catchments, Boulder, CO, July 1-14, 1995. Proceedings. Edited by K.A. Tonnessen et al, Great Yarmouth, 1995, p.107-114, 7 refs.

Snow hydrology, Snow cover stability, Precipitation (meteorology), Snowmelt, Snow composition, Stratification, Ice water interface, Meltwater, Chemical properties, Sampling, Ion density (concentration), Diurnal variations

50-2405

Ion flux through a shallow snowpack: effects of initial conditions and melt sequences.

Davis, R.E., Petersen, C.E., Bales, R.C., MP 3740, International Association of Hydrological Sciences. Publication No.228 and International Symposium on Biogeochemistry of Seasonally Snow-covered Catchments, Boulder, CO, July 1-14, 1995. Proceedings. Edited by K.A. Tonnessen et al, Great Yarmouth, 1995, p.115-126, 21 refs.

Snow cover stability, Snow physics, Snow hydrology, Snowmelt, Freeze thaw cycles, Melting points, Ion diffusion, Snow impurities, Ion density (concentration), Mass transfer, Ice water interface, Simulation, Cold chambers

Six snowmelt experiments were carried out under controlled conditions in a cold room to examine the effects of melt rate, melt-freeze cycles, and initial chemical distribution on the ionic pulse from a physically homogeneous snowpack. The experiment snow volume was 1 m^2 in cross-sectional area and 0.4 m deep. Different initial distributions of chemical species were prepared by introducing tracers at different stages of sieving snow into the snow container. Constant slower rates of melting caused a more pronounced removal of ions, as observed in the initial meltwaters, than did higher rates. Long melt-freeze cycles applied to a chemically homogeneous snowpack concentrated impurities at the base of the pack and produced the greatest ionic concentration in the initial meltwater collected. Short melt-freeze cycles were less effective at elevating concentrations of trace species in the initial meltwaters. As with previous experiments, the initial distribution of impurities was shown to influence the magnitude of the ionic pulse. Chemical species applied to a layer at middepth in the snowpack were removed slower than species applied to a layer on the top.

50-2406

Small basin modeling of snow water equivalence using binary regression tree methods.

Elder, K., Michaelsen, J., Dozier, J., International Association of Hydrological Sciences. Publication No.228 and International Symposium on Biogeochemistry of Seasonally Snow-covered Catchments, Boulder, CO, July 1-14, 1995. Proceedings. Edited by K.A. Tonnessen et al, Great Yarmouth, 1995, p.129-139, 17 refs.

Watersheds, Snow surveys, Snow cover distribution, Snow depth, Classifications, Snow hydrology, Snow water equivalent, Water storage, Models, Statistical analysis

50-2407

Spatially distributed energy balance snowmelt model.

Tarboton, D.G., Chowdhury, T.G., Jackson, T.H., International Association of Hydrological Sciences. Publication No.228 and International Symposium on Biogeochemistry of Seasonally Snow-covered Catchments, Boulder, CO, July 1-14, 1995. Proceedings. Edited by K.A. Tonnessen et al, Great Yarmouth, 1995, p.141-155, 26 refs.

Snow hydrology, Snow physics, Snow cover stability, Snowmelt, Water balance, Heat balance, Snow surface temperature, Snow cover effect, Snow water equivalent, Forecasting, Mathematical models

50-2408

Snow surface energy exchanges and snowmelt at a continental alpine site.

Cline, D., International Association of Hydrological Sciences. Publication No.228 and International Symposium on Biogeochemistry of Seasonally Snow-covered Catchments, Boulder, CO, July 1-14, 1995. Proceedings. Edited by K.A. Tonnessen et al, Great Yarmouth, 1995, p.157-166, 8 refs.

Snow cover stability, Snow hydrology, Snow physics, Snowmelt, Snow air interface, Snow heat flux, Turbulent diffusion, Surface energy, Heat balance, Sublimation, Alpine landscapes, Seasonal variations

50-2409

Distributed snowmelt modeling using a clustering algorithm.

Harrington, R.F., Elder, K., Bales, R.C., International Association of Hydrological Sciences. Publication No.228 and International Symposium on Biogeochemistry of Seasonally Snow-covered Catchments, Boulder, CO, July 1-14, 1995. Proceedings. Edited by K.A. Tonnessen et al, Great Yarmouth, 1995, p.167-174, 19 refs.

Snow hydrology, Snowmelt, Snow surveys, Snow cover distribution, Snow water equivalent, Water storage, Water balance, Watersheds, Classifications, Simulation, Models

50-2410

Multi-dimensional parameter estimation of the integrated Alpine Hydro-chemical model using Monte-Carlo simulation.

Ohte, N., Bales, R.C., International Association of Hydrological Sciences. Publication No.228 and International Symposium on Biogeochemistry of Seasonally Snow-covered Catchments, Boulder, CO, July 1-14, 1995. Proceedings. Edited by K.A. Tonnessen et al, Great Yarmouth, 1995, p.175-183, 10 refs.

Watersheds, Hydrogeochemistry, Alpine landscapes, Water balance, Mass balance, Snow hydrology, Hydrography, Simulation

50-2411

Some surveys of snow chemistry in the Tien Shan of Kirghizstan and Kazakhstan.

Kattelmann, R., Elder, K., Melack, J.M., Aĭzen, E.M., Aĭzen, V.B., International Association of Hydrological Sciences. Publication No.228 and International Symposium on Biogeochemistry of Seasonally Snow-covered Catchments, Boulder, CO, July 1-14, 1995. Proceedings. Edited by K.A. Tonnessen et al, Great Yarmouth, 1995, p.185-190, 19 refs.

Snow surveys, Snow cover stability, Snow composition, Ion density (concentration), Sampling, Chemical analysis, Kazakhstan—Tien Shan, Kyrgyzstan—Tien Shan

50-2412

Spatial distribution of snow chemical load at the tundra-taiga transition.

Pomeroy, J.W., Marsh, P., Jones, H.G., Davies, T.D., International Association of Hydrological Sciences. Publication No.228 and International Symposium on Biogeochemistry of Seasonally Snow-covered Catchments, Boulder, CO, July 1-14, 1995. Proceedings. Edited by K.A. Tonnessen et al, Great Yarmouth, 1995, p.191-203, 24 refs.

Tundra terrain, Taiga, Forest lines, Snow cover stability, Snow water equivalent, Snow composition, Ion diffusion, Blowing snow, Snow air interface, Wind factors, Geochemistry, Sampling, Landscape types, Surface roughness

50-2413

Snow and water chemistry of a headwater alpine basin, Urumqi River, Tian Shan, China.

Liu, F.J., Williams, M.W., Yang, D.Q., Melack, J.M., International Association of Hydrological Sciences. Publication No.228 and International Symposium on Biogeochemistry of Seasonally Snow-covered Catchments, Boulder, CO, July 1-14, 1995. Proceedings. Edited by K.A. Tonnessen et al, Great Yarmouth, 1995, p.207-219, 19 refs.

River basins, Stream flow, Snow hydrology, Snowmelt, Precipitation (meteorology), Meltwater, Runoff, Hydrogeochemistry, Ion diffusion, Eolian soils, Solubility, Sampling, Snow stratigraphy, China—Urumqi River

50-2414

Snowmelt induced chemical changes in seven streams in the Sierra Nevada, California.

Melack, J.M., Sickman, J.O., International Association of Hydrological Sciences. Publication No.228 and International Symposium on Biogeochemistry of Seasonally Snow-covered Catchments, Boulder, CO, July 1-14, 1995. Proceedings. Edited by K.A. Tonnessen et al, Great Yarmouth, 1995, p.221-234, 11 refs.

Snow hydrology, Snowmelt, Meltwater, Limnology, Stream flow, Hydrography, Sampling, Surface waters, Geochemistry, Aerosols, Fallout, Seasonal variations, United States—California—Sierra Nevada

50-2415

Composition of precipitation, bulk deposition, and runoff at a granitic bedrock catchment in the Loch Vale watershed, Colorado, USA.

Clow, D.W., Mast, M.A., International Association of Hydrological Sciences. Publication No.228 and International Symposium on Biogeochemistry of Seasonally Snow-covered Catchments, Boulder, CO, July 1-14, 1995. Proceedings. Edited by K.A. Tonnessen et al, Great Yarmouth, 1995, p.235-242, 13 refs.

Watersheds, Alpine landscapes, Runoff, Sampling, Geochemistry, Precipitation (meteorology), Bedrock, Weathering, Aerosols, Fallout, Solubility, Ion exchange, Environmental tests, United States—Colorado

50-2416

Nitrogen deposition and release in alpine watersheds, Loch Vale, Colorado, USA.

Campbell, D.H., Clow, D.W., Ingersoll, G.P., Mast, M.A., Spahr, N.E., Turk, J.T., International Association of Hydrological Sciences. Publication No.228 and International Symposium on Biogeochemistry of Seasonally Snow-covered Catchments, Boulder, CO, July 1-14, 1995. Proceedings. Edited by K.A. Tonnessen et al, Great Yarmouth, 1995, p.243-253, 22 refs.

Watersheds, Alpine landscapes, Snow hydrology, Snowmelt, Meltwater, Sampling, Runoff, Stream flow, Aerosols, Atmospheric composition, Fallout, Hydrogeochemistry, United States—Colorado

50-2417

Analysis of long term sulfate and nitrate budgets in a Rocky Mountain basin.

Baron, J.S., Allstott, E.J., Newkirk, B.K., International Association of Hydrological Sciences. Publication No.228 and International Symposium on Biogeochemistry of Seasonally Snow-covered Catchments, Boulder, CO, July 1-14, 1995. Proceedings. Edited by K.A. Tonnessen et al, Great Yarmouth, 1995, p.255-261, 15 refs.

Watersheds, Limnology, Snow hydrology, Snowmelt, Precipitation (meteorology), Hydrogeochemistry, Aerosols, Weathering, Ion diffusion, Sampling, Environmental tests

50-2418

Determination of hydrologic pathways in an alpine-subalpine basin using isotopic and chemical tracers, Loch Vale Watershed, Colorado, USA.

Mast, M.A., Kendall, C., Campbell, D.H., Clow, D.W., Back, J., International Association of Hydrological Sciences. Publication No.228 and International Symposium on Biogeochemistry of Seasonally Snow-covered Catchments, Boulder, CO, July 1-14, 1995. Proceedings. Edited by K.A. Tonnessen et al, Great Yarmouth, 1995, p.263-270, 14 refs.

Watersheds, Alpine landscapes, Limnology, Hydrography, Snow hydrology, Snow composition, Snowmelt, Meltwater, Soil water, Runoff, Sampling, Hydrogeochemistry, Isotope analysis, United States—Colorado

50-2419

Chemical hydrograph separation during snowmelt for three headwater basins in Rocky Mountain National Park, Colorado.

Sueker, J.K., International Association of Hydrological Sciences. Publication No.228 and International Symposium on Biogeochemistry of Seasonally Snow-covered Catchments, Boulder, CO, July 1-14, 1995. Proceedings. Edited by K.A. Tonnessen et al, Great Yarmouth, 1995, p.271-281, 13 refs.

Watersheds, Stream flow, Snow hydrology, Snowmelt, Snow composition, Hydrography, Runoff, Subsurface drainage, Hydrogeochemistry, Seasonal variations, United States—Colorado

50-2420

Snowpack controls on soil nitrogen dynamics in the Colorado alpine.

Brooks, P.D., Williams, M.W., Schmidt, S.K., International Association of Hydrological Sciences. Publication No.228 and International Symposium on Biogeochemistry of Seasonally Snow-covered Catchments, Boulder, CO, July 1-14, 1995. Proceedings. Edited by K.A. Tonnessen et al, Great Yarmouth, 1995, p.283-292, 23 refs.

Alpine landscapes, Geochemical cycles, Surface waters, Soil analysis, Snowmelt, Snow accumulation, Snow hydrology, Snow cover effect, Ion exchange, United States—Colorado

50-2421

Niwot Ridge snow fence experiment: biogeochemical response to changes in the seasonal snowpack.

Brooks, P.D., Williams, M.W., Walker, D.A., Schmidt, S.K., International Association of Hydrological Sciences. Publication No.228 and International Symposium on Biogeochemistry of Seasonally Snow-covered Catchments, Boulder, CO, July 1-14, 1995. Proceedings. Edited by K.A. Tonnessen et al, Great Yarmouth, 1995, p.293-302, 22 refs.

Alpine landscapes, Ecosystems, Soil microbiology, Snow physics, Snow accumulation, Snow cover effect, Soil temperature, Seasonal variations, Carbon dioxide, Vapor diffusion, Geochemical cycles, Snow fences, United States—Colorado

50-2422

Variation of dissolved organic carbon during snowmelt in soil and stream waters of two headwater catchments, Summit County, Colorado.

Boyer, E.W., Hornberger, G.M., Bencala, K.E., McKnight, D.M., International Association of Hydrological Sciences. Publication No.228 and International Symposium on Biogeochemistry of Seasonally Snow-covered Catchments, Boulder, CO, July 1-14, 1995. Proceedings. Edited by K.A. Tonnessen et al, Great Yarmouth, 1995, p.303-312, 11 refs.

Watersheds, Stream flow, Hydrography, Hydrogeochemistry, Snow hydrology, Snowmelt, Snow composition, Soil analysis, Organic soils, Solubility, Surface drainage, Sampling, United States—Colorado

50-2423

Hydrochemical processes during snowmelt in a subalpine watershed, Colorado, USA.

Peters, N.E., Leavesley, G.H., International Association of Hydrological Sciences. Publication No.228 and International Symposium on Biogeochemistry of Seasonally Snow-covered Catchments, Boulder, CO, July 1-14, 1995. Proceedings. Edited by K.A. Tonnessen et al, Great Yarmouth, 1995, p.313-319, 7 refs.

Watersheds, Alpine landscapes, Hydrogeochemistry, Snow hydrology, Snowmelt, Meltwater, Stream flow, Ion density (concentration), Runoff, Mass balance, Diurnal variations, United States—Colorado

50-2424

Surface water chemistry and chemical budgets, alpine and subalpine watersheds, Fraser Experimental Forest, Colorado.

Stottlemyer, R., Troendle, C.A., International Association of Hydrological Sciences. Publication No.228 and International Symposium on Biogeochemistry of Seasonally Snow-covered Catchments, Boulder, CO, July 1-14, 1995. Proceedings. Edited by K.A. Tonnessen et al, Great Yarmouth, 1995, p.321-327, 21 refs.

Watersheds, Alpine landscapes, Forest ecosystems, Forest canopy, Vegetation factors, Hydrogeochemistry, Stream flow, Snow hydrology, Snowmelt, Snow cover effect, Runoff, United States—Colorado

50-2425

Chemical and isotopic evolution of a layered eastern U.S. snowpack and its relation to streamwater composition.

Shanley, J.B., Kendall, C., Albert, M.R., Hardy, J.P., MP 3741, International Association of Hydrological Sciences. Publication No.228 and International Symposium on Biogeochemistry of Seasonally Snow-covered Catchments, Boulder, CO, July 1-14, 1995. Proceedings. Edited by K.A. Tonnessen et al, Great Yarmouth, 1995, p.329-338, 17 refs.

Watersheds, Hydrogeochemistry, Hydrography, Snow hydrology, Snowmelt, Snow composition, Stratification, Ion diffusion, Metamorphism (snow), Sampling, Snow cover effect, Isotope analysis

The chemical, isotopic, and morphologic evolution of a layered snowpack was investigated during the winter of 1993-94 at Sleepers River Research Watershed in Danville, VT. The snowpack was monitored at two small basins: a forested basin at 525 m elevation, and an agricultural basin at 292 m elevation. At each site, the snowpack morphology was characterized and individual layers were sampled seven times during the season. Nitrate and $\delta^{18}O$ profiles in the snowpack remained relatively stable until peak accumulation in mid-March, except near the snow surface, where rain-on-snow events caused water and nitrate movement down to impeding ice layers. Subsequently, water and nitrate moved more readily through the ripening snowpack. As the snowpack evolved, combined processes of preferential ion elution, isotopic fractionation, and infiltration of isotopically heavy rainfall caused the pack to become depleted in solutes and isotopically enriched. The release of nitrate and isotopically depleted water was reflected in patterns of nitrate concentrations and $\delta^{18}O$ of meltwater and stream water.

50-2426

Tracing sources of nitrate in snowmelt runoff using the oxygen and nitrogen isotopic compositions of nitrate.

Kendall, C., Campbell, D.H., Burns, D.A., Shanley, J.B., Silva, S.R., Chang, C.C.Y., International Association of Hydrological Sciences. Publication No.228 and International Symposium on Biogeochemistry of Seasonally Snow-covered Catchments, Boulder, CO, July 1-14, 1995. Proceedings. Edited by K.A. Tonnessen et al, Great Yarmouth, 1995, p.339-347, 15 refs.

Watersheds, Stream flow, Hydrogeochemistry, Aerosols, Snow hydrology, Snow composition, Snowmelt, Meltwater, Snow cover effect, Runoff, Oxygen isotopes, Isotope analysis, Origin

50-2427

Chemical and isotopic tracers of snowmelt flowpaths in a subalpine watershed.

Miller, E.K., Carson, C.D., Friedland, A.J., Blum, J.D., International Association of Hydrological Sciences. Publication No.228 and International Symposium on Biogeochemistry of Seasonally Snow-covered Catchments, Boulder, CO, July 1-14, 1995. Proceedings. Edited by K.A. Tonnessen et al, Great Yarmouth, 1995, p.349-353, 3 refs.

Watersheds, Hydrography, Alpine landscapes, Forest ecosystems, Hydrogeochemistry, Snow hydrology, Snowmelt, Runoff, Water transport, Isotope analysis, Sampling, Ion diffusion

50-2428
Chemistry of artificial snow and its influence on the germination of mountain flora.
Jones, H.G., Devarennes, G., International Association of Hydrological Sciences. Publication No.228 and International Symposium on Biogeochemistry of Seasonally Snow-covered Catchments, Boulder, CO, July 1-14, 1995. Proceedings. Edited by K.A. Tonnessen et al, Great Yarmouth, 1995, p.355-360, 6 refs.
Forest ecosystems, Plant ecology, Growth, Vegetation patterns, Artificial snow, Snow composition, Meltwater, Chemical analysis, Environmental impact, Sampling

50-2429
Diurnal variations of flow-through velocity and transit time of meltwaters traversing moulin-conduit systems in an alpine glacier.
Collins, D.N., International Association of Hydrological Sciences. Publication No.228 and International Symposium on Biogeochemistry of Seasonally Snow-covered Catchments, Boulder, CO, July 1-14, 1995. Proceedings. Edited by K.A. Tonnessen et al, Great Yarmouth, 1995, p.363-369, 8 refs.
Glacial hydrology, Alpine glaciation, Glacier melting, Meltwater, Subglacial drainage, Water flow, Velocity, Diurnal variations, Hydrogeochemistry, Solubility

50-2430
Daily patterns of discharge, solute content and solute flux in meltwaters draining from two alpine glaciers.
Collins, D.N., International Association of Hydrological Sciences. Publication No.228 and International Symposium on Biogeochemistry of Seasonally Snow-covered Catchments, Boulder, CO, July 1-14, 1995. Proceedings. Edited by K.A. Tonnessen et al, Great Yarmouth, 1995, p.371-378, 5 refs.
Glacial hydrology, Alpine glaciation, Glacier melting, Meltwater, Suspended sediments, Solubility, Hydrogeochemistry, Subglacial drainage, Periodic variations, Sampling

50-2431
Changing drainage patterns within South Cascade Glacier, Washington, USA, 1964-1992.
Fountain, A.G., Vaughn, B.H., International Association of Hydrological Sciences. Publication No.228 and International Symposium on Biogeochemistry of Seasonally Snow-covered Catchments, Boulder, CO, July 1-14, 1995. Proceedings. Edited by K.A. Tonnessen et al, Great Yarmouth, 1995, p.379-386, 18 refs.
Glacial hydrology, Watersheds, Subglacial drainage, Glacier melting, Meltwater, Seasonal ablation, Stream flow, Glacier mass balance, United States—Washington

50-2432
Interpretation of hydrochemical evidence for meltwater routing at a high arctic glacier.
Hodgkins, R., Tranter, M., Dowdeswell, J.A., International Association of Hydrological Sciences. Publication No.228 and International Symposium on Biogeochemistry of Seasonally Snow-covered Catchments, Boulder, CO, July 1-14, 1995. Proceedings. Edited by K.A. Tonnessen et al, Great Yarmouth, 1995, p.387-394, 15 refs.
Glacial hydrology, Hydrogeochemistry, Glacier melting, Icing, Ice sampling, Meltwater, Subglacial drainage, Solubility, Ion density (concentration)

50-2433
Composition of subglacial meltwaters sampled from boreholes at the Haut Glacier d'Arolla, Switzerland.
Lamb, H.R., et al, International Association of Hydrological Sciences. Publication No.228 and International Symposium on Biogeochemistry of Seasonally Snow-covered Catchments, Boulder, CO, July 1-14, 1995. Proceedings. Edited by K.A. Tonnessen et al, Great Yarmouth, 1995, p.395-403, 11 refs.
Glacial hydrology, Glacier melting, Meltwater, Runoff, Sampling, Subglacial drainage, Weathering, Hydrogeochemistry, Statistical analysis, Boreholes, Ion density (concentration), Switzerland—Haut Glacier d'Arolla

50-2434
Major, minor, and trace element chemistry of surface waters in the Everest region of Nepal.

Reynolds, B., Chapman, P.J., French, M.C., Jenkins, A., Wheater, H.S., International Association of Hydrological Sciences. Publication No.228 and International Symposium on Biogeochemistry of Seasonally Snow-covered Catchments, Boulder, CO, July 1-14, 1995. Proceedings. Edited by K.A. Tonnessen et al, Great Yarmouth, 1995, p.405-412, 17 refs.

Glacial hydrology, Mountain glaciers, Glacier melting, Meltwater, Surface waters, Runoff, Hydrography, Hydrogeochemistry, Solubility, Sampling, Ion density (concentration), Nepal

50-2435
Characteristics of runoff formation at the Kirgizskiy Alatoo, Tien Shan.

Aĭzen, V.B., Aĭzen, E.M., Melack, J.M., International Association of Hydrological Sciences. Publication No.228 and International Symposium on Biogeochemistry of Seasonally Snow-covered Catchments, Boulder, CO, July 1-14, 1995. Proceedings. Edited by K.A. Tonnessen et al, Great Yarmouth, 1995, p.413-430, 5 refs.

Watersheds, River basins, Water balance, Runoff, Hydrography, Glacial hydrology, Snow water equivalent, Snowmelt, Meltwater, Precipitation (meteorology), Air temperature, Seasonal variations, Russia—Tien Shan

50-2436
Chemical weathering in the South Cascade Glacier basin, comparison of subglacial and extra-glacial weathering.

Axtmann, E.V., Stallard, R.F., International Association of Hydrological Sciences. Publication No.228 and International Symposium on Biogeochemistry of Seasonally Snow-covered Catchments, Boulder, CO, July 1-14, 1995. Proceedings. Edited by K.A. Tonnessen et al, Great Yarmouth, 1995, p.431-439, 32 refs.

Glacial geology, Watersheds, Glacial hydrology, Hydrogeochemistry, Weathering, Solubility, Glacial rivers, Subglacial drainage, Sampling, Ion density (concentration), United States—Washington

50-2437
Use of sulfur-35 and tritium to study runoff from an alpine glacier, Wind River Range, Wyoming.

Michel, R.L., Naftz, D.L., International Association of Hydrological Sciences. Publication No.228 and International Symposium on Biogeochemistry of Seasonally Snow-covered Catchments, Boulder, CO, July 1-14, 1995. Proceedings. Edited by K.A. Tonnessen et al, Great Yarmouth, 1995, p.441-444, 6 refs.

Mountain glaciers, Watersheds, Glacial hydrology, Glacier mass balance, Glacier melting, Meltwater, Runoff, Sampling, Radioactive isotopes, Isotope analysis, United States—Wyoming

50-2438
Modeling the spatial distribution of seasonal snow accumulation on Teton Glacier, Wyoming, USA.

Elder, K., International Association of Hydrological Sciences. Publication No.228 and International Symposium on Biogeochemistry of Seasonally Snow-covered Catchments, Boulder, CO, July 1-14, 1995. Proceedings. Edited by K.A. Tonnessen et al, Great Yarmouth, 1995, p.445-454, 17 refs.

Glacier mass balance, Glacial hydrology, Snow accumulation, Snow depth, Snow water equivalent, Precipitation (meteorology), Glacial meteorology, Seasonal variations, Sampling, Statistical analysis, Models, United States—Wyoming

50-2439
Simulation of runoff processes of a continental mountain glacier in the Tian Shan, China.

Kang, E.S., Ohmura, A., Lang, H., International Association of Hydrological Sciences. Publication No.228 and International Symposium on Biogeochemistry of Seasonally Snow-covered Catchments, Boulder, CO, July 1-14, 1995. Proceedings. Edited by K.A. Tonnessen et al, Great Yarmouth, 1995, p.455-465, 9 refs.

Glacial hydrology, Mountain glaciers, Glacier mass balance, Glacier melting, Meltwater, Runoff, Water transport, Subglacial drainage, Heat balance, Mathematical models, Simulation, China—Tian Shan

50-2440
Development of a field method for ammonium picrate/picric acid in soil and water.

Thorne, P.G., Jenkins, T.F., MP 3742, International symposium, Las Vegas, NV, Feb. 22-24, 1995. Field screening methods for hazardous wastes and toxic chemicals. VIP-47, Vol.2, Pittsburgh, Air & Waste Management Association, 1995, p.942-947, 11 refs.

Soil pollution, Soil tests, Soil chemistry, Soil analysis, Explosives

Methods for the detection and quantification of ammonium picrate and picric acid in soil and water were developed. Picrate ions were extracted from water directly or from acetone extracts of soil by acidic ion-exchange materials. Elution from the ion-exchangers was accomplished by converting the retained picrate to picric acid using strong aqueous acid/organic solvent mixtures. The resulting colorless solution was then converted back to a colored picrate solution by dilution with water. Quantification and correction for background interferences was based on spectrophotometric measurements. A chemical confirmation of picrate is possible for the water method. Method Detection Limits (MDLs) are 1.3 ppm for soil and 3.6 ppb for water. Both methods can be implemented under field conditions.

50-2441
Interlaboratory evaluation of volatile organic compound determination in soils prepared by vapor fortification.

Hewitt, A.D., Grant, C.L., MP 3743, International symposium, Las Vegas, NV, Feb. 22-24, 1995. Field screening methods for hazardous wastes and toxic chemicals. VIP-47, Vol.2, Pittsburgh, Air & Waste Management Association, 1995, p.1207-1212, 9 refs.

Soil pollution, Soil tests, Soil chemistry, Soil analysis

The feasibility of using vapor fortification to prepare secondary soil standards containing volatile organic compounds (VOCs) was evaluated by an interlaboratory study. Twelve laboratories used EPA Method 8240 (SW846) to analyze two independently prepared subsamples of three different soil matrices fortified with trans-1,2-dichloroethylene (TDCE), trichloroethylene (TCE), benzene (Ben), and toluene (Tol). A quality assurance (QA) standard with certified concentrations of TCE, Ben, and Tol (no TDCE) was also analyzed. The pooled relative standard deviation (RSD) for the QA standard was 7.8%, while the same analytes in the soils produced a pooled RSD of 10.4%. Agreement of these precision estimates is excellent, considering that soil analysis required an extraction step while the QA standard was solvent (methanol) based. TDCE in the soils yielded less precise results (pooled RSD of 20.3%), presumably because of its high volatility.

50-2442
Screening for metals by portable XRF using fundamental parameter analysis and single reference standard calibration.

Hewitt, A.D., MP 3744, International symposium, Las Vegas, NV, Feb. 22-24, 1995. Field screening methods for hazardous wastes and toxic chemicals. VIP-47, Vol.2, Pittsburgh, Air & Waste Management Association, 1995, p.1309-1321, 18 refs.

Soil pollution, Soil tests, Soil chemistry, Soil analysis, Metals, X ray analysis

Soils and other particle matrices were analyzed for copper, zinc, arsenic, lead, chromium, cobalt, nickel, mercury, thallium, selenium, silver, antimony, cadmium, tin, and barium using transportable high-resolution X-ray fluorescence (XRF) spectrometers. Quantitative determinations for these metals were based on fundamental parameter analysis and a method that uses a single calibration standard. Both of these methods were assessed to see if they were capable of circumventing the need to acquire matrix matched standards when screening for metals in a variety of environmental matrices. With the exception of nickel, cobalt and chromium, concentrations within 50% of the expected values were routinely obtained at and below 1000 µg/g in soils.

50-2443

Benthic foraminiferal assemblages in the Arctic Ocean: indicators for water mass distribution, productivity, and sea ice drift. [Bentthische Foraminiferenfaunen als Wassermassen-, Produktions- und Eisdriftanzeiger im Arktischen Ozean]

Wollenburg, J., *Berichte zur Polarforschung,* 1995, No.179, 227p., In German with English summary. Refs. p.143-159.

Oceanographic surveys, Marine deposits, Bottom sediment, Ice rafting, Drift, Ocean currents, Water transport, Biomass, Nutrient cycle

50-2444

Road surfaces under severe climatic conditions. [Superstructures routières dans des conditions climatiques extrêmes]

Pigois, M.L., *Strassen und Verkehr,* June 1980, No.6, p.232-234, In French.

Pavements, Road icing, Road maintenance, Environmental tests

50-2445

Frozen ground. *International Permafrost Association. News bulletin,* Dec. 1995, No.18, 28p.

Research projects, Organizations, Meetings, Permafrost

50-2446

From Anik to MSAT: bringing modern communications to the North.

Pool, A., *Above & beyond,* Winter 1996, 8(1), p.7-13.

Telecommunication, Radio communication, Data transmission, Spacecraft, Economic development, Regional planning, Cost analysis, Canada—Northwest Territories

50-2447

Kennecott's Diavik project: diamond exploration enters the final stage. *Above & beyond,* Winter 1996, 8(1), p.23-34.

Exploration, Minerals, Mining, Economic development, Cost analysis, Canada—Northwest Territories

50-2448

Synoptic climatology of ablation on a New Zealand glacier.

Hay, J.E., Fitzharris, B.B., *Journal of climatology,* 1988, Vol.8, p.201-215, 28 refs.

Glacier surveys, Mountain glaciers, Glacier oscillation, Glacier ablation, Glacier mass balance, Glacier heat balance, Glacial meteorology, Synoptic meteorology, Atmospheric circulation, New Zealand

50-2449

Relationship between soil moisture content and water potential as found by the filter paper method.

Waters, T.J., *Australia. Queensland. Main Roads Department. Report,* Sep. 1980, No.23, 11p. + appends., 6 refs.

Subgrade soils, Soil water migration, Water content, Soil tests, Moisture detection

50-2450

Biennial report 1993-1994.

Alaska. University. Geophysical Institute, Fairbanks, 1995, 226p.

Research projects, Organizations, Polar atmospheres, Ice surveys, Glacier surveys, Snow surveys, Permafrost surveys, Geological surveys, Geophysical surveys

50-2451

Effect of the environment on the bearing capacity of a road. Final report. Part 1. [Influence du milieu ambiant sur la force portante d'une chaussée. Rapport final. 1ère partie]

Pfister, R., Dysli, M., Recordon, E., Lausanne, Switzerland, École polytechnique fédérale, Laboratoire de géotechnique mécanique des sols, Nov. 1979, 22p. + appends., In French.

Road icing, Pavements, Subgrade soils, Trafficability, Bearing strength, Road maintenance, Environmental tests, Cold weather tests

50-2452

National Weather Service observing handbook, No.7. Surface observations.

U.S. National Oceanic and Atmospheric Administration. National Weather Service. Office of Systems Operations. Observing Systems Branch, Silver Spring, MD, U.S. Department of Commerce, Mar. 1994, Var. p.

Weather observations, Weather forecasting, Manuals

50-2453

Smart Weapons Operability Enhancement (SWOE) Joint Test and Evaluation (JT&E) Program. Final report.

Welsh, J.P., MP 3745, *U.S. Army Cold Regions Research and Engineering Laboratory. SWOE report,* Aug. 1994, No.94-10, Var. p., ADB-194 042, 27 refs.

Terrain identification, Infrared photography, Infrared reconnaissance, Environment simulation, Data transmission, Image processing, Computer programs, Military research, Military operation, Military equipment

50-2454

Organic carbon in late Quaternary Arctic Ocean sediments: terrigenous supply and marine productivity. [Organischer Kohlenstoff in spätquartären Sedimenten des Arktischen Ozeans: terrigener Eintrag und mariner Produktivität]

Schubert, C.J., *Berichte zur Polarforschung,* 1995, No.177, 178p., In German with English summary. Refs. p.121-137.

Geological surveys, Oceanographic surveys, Marine geology, Marine deposits, Bottom sediment, Quaternary deposits, Ice rafting, Geochemistry, Nutrient cycle, Biomass, Drill core analysis, Paleoclimatology, Geochronology

50-2455

Multidimensional steady conduction in convecting, radiating, and convecting-radiating fins and fin assemblies.

Aziz, A., Lunardini, V.J., MP 3746, *Heat transfer engineering,* 1995, 16(3), p.32-64, 61 refs.

Heat transfer, Heat loss, Heat sinks, Conduction, Convection, Thermal radiation, Cooling systems, Mathematical models

This article reviews the literature on multidimensional heat conduction in single fins and fin assemblies. The surface heat dissipation mechanisms include pure convection, pure radiation, and simultaneous convection and radiation. Two-dimensional heat transfer results are presented for longitudinal, radial, and cylindrical fins. The discussion also covers square and polygonal fins on round tubes and composite fins. These heat transfer results encompass a variety of situations, such as a nonconstant base temperature, nonuniform ambient temperature, asymmetric thermal boundary conditions, anisotropy of fin material, variable heat transfer coefficient, and internal heat generation. The article provides a comprehensive collection of important analytical and numerical results for two-dimensional effects in extended surfaces, hence, both scientific and practice-oriented heat transfer workers would find the information convenient to use for analysis and design.

50-2456

Material interactions when sampling groundwater.

Parker, L.V., MP 3747, Department of Defense Environmental Technology Workshop, Hershey, PA, May 22-24, 1995, Aberdeen Proving Ground, MD, U.S. Army Environmental Center, 1995, p.317-324, 20 refs.

Soil pollution, Water pollution, Ground water, Wells, Well casings, Soil tests, Soil analysis, Soil chemistry, Water chemistry

50-2457

Low-temperature environmental testing system design—Part 1.

Lynde, P.G., Yonkers, E.D., *Heating/piping/air conditioning,* Jan. 1996, p.40-46.

Motor vehicles, Engines, Environmental tests, Low temperature tests, Cold weather performance, Thermal stresses, Pipes (tubes), Pumps, Ice prevention

50-2458

Coil freezing: what a relief.

Jacobs, T.L., *Heating/piping/air conditioning,* Dec. 1995, p.79,80,83.

Pipes (tubes), Heat pipes, Pipeline freezing, Radiant heating, Air conditioning, Coolants, Ice prevention

50-2459

Ground-coupled heat pumps for family housing units.

Phetteplace, G., MP 3748, *U.S. Army Center for Public Works, Alexandria, VA. Facilities Engineering Applications Program. Technical report. User guide,* Mar. 1995, FEAP-UG-CRREL-95/01, 19p., 7 refs.

Residential buildings, Houses, Heat pumps, Heat pipes, Heat recovery, Geothermy

50-2460

Evaluation of the geothermal heat pump installation at Naval Air Station, Patuxent River.

Garg, S., Phetteplace, G., MP 3749, *U.S. Naval Facilities Engineering Service Center. Technical memorandum,* Oct. 1995, TM-2157-E&U, 3p. + figs., 1 ref. For an earlier version see 49-1412.

Buildings, Military facilities, Heat pumps, Geothermy

50-2461

Snow-induced thermal variations around a single conifer tree.

Hardy, J.P., Albert, M.R., MP 3750, *Hydrological processes,* 1995, Vol.9, p.923-933, 19 refs.

Snow surveys, Snow cover distribution, Snow depth, Snow accumulation, Snow heat flux, Snow hydrology, Snowmelt, Frost penetration, Vegetation factors, Forest canopy, Interception, Runoff forecasting

The influence of trees on the ground thermal regime is important to the overall winter energy exchange in a snow-covered, forested watershed. In this work, spatial zones around a single conifer tree were defined and examined for their controls on the snow cover, snow-ground interface temperatures and frozen ground extent. A large white spruce *(Picea glauca),* approximately 18 m tall with a crown diameter of 7.5 m and located in northern Vermont, was the subject of this study. The tree was instrumented with thermistors to measure the snow-ground interface temperature between the tree trunk and 6 m from the tree into undisturbed snow. Four distinct zones around the conifer are defined that affect the snow distribution characteristics: adjacent to the trunk; the tree wall; the tree crown perimeter; and the unaffected area away from the tree. At the time of peak snow accumulation and during the ablation season, snow depth and density profiles were measured. The area beneath the canopy accumulated 34% of the snow accumulated in the undisturbed zone. By the end of the ablation season, the depth of snow under the canopy had decreased to 18% of the undisturbed snow depth. The tree and branch characteristics of spruce in this temperate climate resulted in a different snow depth profile compared with previous empirical relationships around a single conifer. A new relationship is presented for snow distribution around conifer trees that has the ability to better fit data from a variety of conifer types than previously published relationships.

50-2462

Distributed snow process modelling: an image processing approach.

Davis, R.E., McKenzie, J.C., Jordan, R., MP 3751, *Hydrological processes,* 1995, Vol.9, p.865-875, 14 refs.

Snow surveys, Snow cover distribution, Snow depth, Snow density, Snow heat flux, Snow hydrology, Snowmelt, Runoff forecasting, Computerized simulation

An approach to spatially distribute a snow process model by segmenting images of land cover, terrain and snow properties is reported. A small 1.7 ha study area with an existing database was selected for this preliminary evaluation. The methodology was carried out over a relatively flat valley bottom at Camp Grayling, MI. Meteorological measurements on two sides of the area showed only small differences, so uniform meteorological variables were assumed over the site. Initial snow cover conditions were reconstructed and were distributed over the area using snow maps and sparse snow pit measurements. One meter resolution terrain, soil, vegetation and snow type maps were individually processed into class maps. These layers were then combined to produce a segmented class map, where the attributes from the data layers were known for each class. A one-dimensional model of snow processes was run for each class, then the results were mapped back into images. Shallow snow conditions provided high sensitivity of ablation patterns to meteorological conditions over a 72 h period. The model performance was assessed by comparing predicted and observed ablation patterns. The error in total snow-covered area was less than 9%. However, the location errors were greater (predicted snow where no snow was observed and observed snow where no snow was predicted). Extensive error analysis was not justified because of the lack of multiple point measurements of snow properties.

50-2463
Water limitations and plant community development in a polar desert.
Gold, W.G., Bliss, L.C., *Ecology,* July 1995, 76(5), p.1558-1568, 43 refs.
Deserts, Desert soils, Cryogenic soils, Soil water, Plant ecology, Plant physiology, Vegetation patterns, Nutrient cycle, Biomass, Canada—Northwest Territories—Devon Island

50-2464
Management of winter soil temperatures to control streambank erosion.
Bohn, C., Practical approaches to riparian resource management. Educational workshop, Billings, MT, May 8-11, 1989, Billings, MT, U.S. Bureau of Land Management, 1989, p.69-71, 20 refs.
Soil temperature, Soil conservation, Soil stabilization, Frost protection, Bank protection (waterways), Channel stabilization, Water erosion, Vegetation factors, Protective vegetation, Snow retention

50-2465
Ground-coupled heat pumps.
Phetteplace, G., MP 3752, USACE Electrical and Mechanical Engineering Training Conference, St. Louis, MO, June 5-9, 1995. Proceedings, Fort Belvoir, VA, U.S. Army Corps of Engineers, 1995, p.748-765, 8 refs.
Residential buildings, Heat pumps, Geothermy, Heat pipes, Heat transfer, Heat recovery, Radiant heating, Cooling systems

50-2466
Hopkinson bar perforation of laminated composite.
Nwosu, S.N., Sivapuram, S.K., Dutta, P.K., Hui, D., MP 3753, International Conference on Composites Engineering, 2nd, New Orleans, Aug. 21-24, 1995. ICCE/2. Edited by D. Hui, New Orleans, University, International Community for Composites Engineering, p.559-560, 4 refs.
Composite materials, Construction materials, Impact tests, Penetration tests, Shock waves, Strain measuring instruments
A high energy split Hopkinson pressure bar was developed at Dillard University to investigate basic wave propagation phenomena in composite materials subjected to high strain perforation loading conditions. A procedure was established to quantify energy expended in the perforation process where the absorbed energy is a relative measure of the material strength and damage process. This paper describes the basic features of the Hopkinson bar system for dynamic loading conditions to elucidate the characteristics of the perforation process, the nature of the energy absorption process, and to explain and predict the extent of damage sustained during high strain rate perforation.

50-2467
Strengthening and reinforcing concrete with composities.
Dutta, P.K., Lampo, R.G., MP 3754, International Conference on Composites Engineering, 2nd, New Orleans, Aug. 21-24, 1995. ICCE/2. Edited by D. Hui, New Orleans, University, International Community for Composites Engineering, p.203-204, 13 refs.
Composite materials, Plastics, Reinforced concretes, Concrete strength
Fiber reinforced plastic (FRP) reinforcements have recently received increasing attention as the reinforcing elements in concretes as long rods, gratings, pre-tensioning or post-tensioning cables, and plates or wraps of laminates or woven fabrics of reinforcing fibers. This paper reviews some of these FRP reinforcing or repairing elements of concrete.

50-2468
Influence of moisture on FRP composites.
Bhatacharya, R.K., Dutta, P.K., Hui, D., MP 3755, International Conference on Composites Engineering, 2nd, New Orleans, Aug. 21-24, 1995. ICCE/2. Edited by D. Hui, New Orleans, University, International Community for Composites Engineering, p.63-64, 7 refs.
Composite materials, Plastics, Construction materials, Moisture transfer
Fiber reinforced plastic (FRP) composites represent a new class of materials, the excellent durability of which is the primary reason for their use in many long term applications of structural elements. FRP composites are also attractive matrials for construction of offshore structures. However, when a specific application of FRP composites is contemplated, it is essential for the designers to know not only the answers to questions regarding strength and stiffness, but also the questions of how long the material will last under the conditions anticipated. It is to be noted that FRP composites absorb moisture which changes the properties of resins and thus plays a crucial role on the life cycle of these composites. This paper briefly deals with the effects of absorbed moisture on the mechanical properties of FRP composites.

50-2469
AFGWC snow analysis model.
Hall, S.J., *U.S. Air Force Global Weather Central. Report,* Feb. 1986, AFGWC/TN-86/001, 23p., 12 refs.
Snow surveys, Snow cover distribution, Snow depth, Snowfall, Snow accumulation, Statistical analysis, Computerized simulation

50-2470
Scavenging of gases during growth of ice crystals.
Santachiara, G., Prodi, F., Vivarelli, F., Acid rain research: do we have enough answers. Specialty conference, 's Hertogenbosch, Netherlands, Oct. 10-12, 1994. Proceedings. Studies in environmental science, Vol.64, Amsterdam, Netherlands, Elsevier Science, 1995, p.411-412, 5 refs.
Air pollution, Snow crystal growth, Ice crystal growth, Ice crystal adhesion, Ice sublimation, Precipitation (meteorology), Scavenging

50-2471
Comparison of aircraft icing forecast models.
Cornell, D., Donahue, C.A., Keith, C., *U.S. Air Force Combat Climatology Center. Technical note,* Dec. 1995, AFCCC/TN-95/004, 33p., 43 refs.
Aircraft icing, Ice forecasting, Ice accretion, Computerized simulation

50-2472
Effects of capillary discontinuities on water flow and water retention in layered snowcovers.
Jordan, R., MP 3756, *Defence science journal,* Apr. 1995, 45(2), p.79-91, 15 refs. For another version see 49-903.
Snow hydrology, Snowmelt, Snow permeability, Snow stratigraphy, Snow heat flux, Snow water equivalent, Seepage, Capillarity, Water flow, Water retention
The effect of capillary barriers in layered snowcovers has been examined through use of a numerical mass and energy balance model, laboratory tests and field tests. The degree of suction within the layers has been related to capillary rise and in turn to snow porosity and grain size. The relative importance of permeability and capillary tension on liquid water levels has been examined and it was concluded that capillary discontinuities play a dominant role. It has been shown both theoretically and experimentally that high-over-low suction transitions lead to interruption of water flow vertically and to horizontal movement along discontinuities. Infiltration rates predicted by the numerical model are low because of the omission of finger flow. A more realistic rendering would require a three-dimensional model or incorporate the empirical approach of Marsh and Woo.

50-2473
Annual report 1995.
Arctic Institute of North America, Calgary, University of Alberta, 1996, 16p., List of publications passim.
Research projects, Organizations, Cost analysis

50-2474
Comparison of infrared radiometers used to gather background signature data.
Berger, R.H., Bleiweiss, M.P., MP 3757, *SPIE—The International Society for Optical Engineering. Proceedings,* 1995, Vol.2469, Targets and backgrounds: characterization and representation, Orlando, FL, Apr. 17-19, 1995. Edited by W.R. Watkins and D. Clement, p.576-586, 6 refs.
Terrain identification, Radiometry, Infrared photography, Infrared reconnaissance, Military operation, Military research, Military equipment
Over the past several years there has been a large quantity of infrared target and background signature data collected using imaging radiometers. As with any data, one of the primary questions that must be answered is, "How has the measurement system affected the data?" During the Smart Weapons Operability Enhancement (SWOE) signature measurement program this question was addressed using two "identical" AGEMA 880 dual-band radiometer systems. These two systems were used to determine how much of the variation that is observed in the signature data can be accounted for by measurement system differences. Measurements were made at the Yuma Proving Ground over a 47 day period from Mar. 15 to Apr. 30, 1993. The radiometers were mounted side-by-side and the fields of view registered as closely as possible. Most of the background signature measurements were preceded by simultaneous blackbody measurements with all four radiometers. The blackbody measurements were used to compare the performance of the two systems under the various weather conditions experienced during the measurement period. The blackbody measurements have shown that over an ambient temperature range of almost 40°C the variation between radiometer pairs was less than 1°C for the long-wave (8-12 μm) and less than 2.5°C for the short-wave (3-5 μm).

50-2475
Tall and hard fescue responses to periodic soil water deficits.
Brar, G.S., Palazzo, A.J., MP 3758, *Journal of agronomy & crop science,* 1995, Vol.175, p.221-229, 29 refs.
Grasses, Roots, Plant ecology, Plant physiology, Transpiration, Revegetation, Land reclamation, Soil conservation, Soil stabilization
Tall *(Festuca arundinacea* Schreb.) and hard *(Festuca ovina* var. *longifolia* (L.) Koch) fescues are widely sown to stabilize disturbed soils in the cool-humid and transition climatic zones of the U.S. The objectives of this study were to: a) quantify changes in the allocation of dry matter and growth of tall and hard fescue, forced to grow on stored soil water in sandy soil; and b) compare dry matter allocation over time between roots and shoots to evaluate the dynamics of root-associated drought-avoidance mechanisms. A randomized complete block experiment with four replications and two factors (species and stress level) was conducted in a greenhouse. The main blocks consisted of two fescue species: tall fescue and hard fescue; sub-blocks contained stress levels: well-watered and stressed. Low, medium and severe stresses were imposed by withholding water in one set of pots. The types of fescue species grown significantly affected leaf area, plant height, water use, root length, longest root, root area, shoot and root dry biomass, and root:shoot ratio. In conclusion, hard fescue had a shallower root system, shorter plant canopy, slower growth, and transpired less water to make it more drought tolerant. Tall fescue, with a deeper root system, longer plant canopy, faster growth and greater water transpiration, is less drought-tolerant at medium and severe stresses. Root attributes strongly correlated with shoot attributes and can be considered for breeding programs promoting drought tolerance.

50-2476
Relationship between temperature and E-modulus.
Baltzer, S., *Nordic road & transport research,* 1992, No.3, p.3-5.
Pavements, Subgrade soils, Bearing strength, Soil trafficability, Temperature effects, Road maintenance

50-2477
1994-1995 antarctic field season.
Roberts, C.A., Jatko, J.A., Lynch, J.T., Rand, J.H., MP 3760, *Society of Automotive Engineers. SAE technical paper series,* 1995, No.951657, 7p., 17 refs. Presented at the 25th International Conference on Environmental Systems, San Diego, CA, July 10-13, 1995.
Research projects, Stations, Logistics, Water supply, Waste disposal, Antarctica—Amundsen-Scott Station, Antarctica—McMurdo Station

50-2478
Use of frozen ground techniques in construction.
Sanger, F.J., MP 3759, ASCE Structural Engineering Conference, Seattle, WA, May 8-12, 1967. Conference preprint, No.514, New York, American Society of Civil Engineers, 1967, 46p., 32 refs.
Soil freezing, Artificial freezing, Soil stabilization, Frozen ground thermodynamics, Frozen ground strength, Frozen ground compression
A brief discussion on the mechanical and thermal properties of frozen soils leads to design techniques for retaining-structures of artificially-frozen soils, followed by notes on field practice. Frozen soils are not elastic, and the formation of ice in soil demands a special treatment of heat conduction. Examples of design for two soils and two types of wall are given.

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Great Lakes ice cover studies.
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Organizations, Research projects, Lake ice, Ice surveys, Ice conditions, Ice cover effect, Climatic changes, Great Lakes

50-2480
Ice-cover influence on flow and bedload transport in dune-bed channels.
Smith, B.T., Iowa City, University of Iowa, 1995, 185p., University Microfilms order No.DA9536251, Ph.D. thesis. 46 refs.
River ice, Ice water interface, Ice cover effect, River flow, Channels (waterways), Suspended sediments, Bottom sediment, Alluvium, Sediment transport, Water erosion, Mathematical models

50-2481
Overview of environmental and hydrogeologic conditions at Galena, Alaska.
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Water supply, Water reserves, Hydrogeology, Hydrogeochemistry, Water chemistry, Water pollution, Soil pollution, River ice, Airports, United States—Alaska—Galena

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Overview of environmental and hydrogeologic conditions at Fort Yukon, Alaska.
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Water supply, Water reserves, Hydrogeology, Hydrogeochemistry, Water chemistry, Water pollution, Soil pollution, Ice jams, Permafrost hydrology, Subpermafrost ground water, Airports, United States—Alaska—Fort Yukon

50-2483
Overview of environmental and hydrogeologic conditions at Tanana, Alaska.
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Water supply, Water reserves, Hydrogeology, Hydrogeochemistry, Water chemistry, Water pollution, Soil pollution, Subpermafrost ground water, Permafrost hydrology, Airports, United States—Alaska—Tanana

50-2484
Overview of environmental and hydrogeologic conditions at Bethel, Alaska.
Dorava, J.M., Hogan, E.V., *U.S. Geological Survey. Open-file report,* 1995, No.95-173, 17p. + appends., 35 refs.
Water supply, Water reserves, Hydrogeology, Hydrogeochemistry, Water chemistry, Water pollution, Soil pollution, Ice jams, Subpermafrost ground water, Permafrost hydrology, Airports, United States—Alaska—Bethel

50-2485
Overview of environmental and hydrogeologic conditions at Farewell, Alaska.
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Water supply, Water reserves, Hydrogeology, Hydrogeochemistry, Water chemistry, Water pollution, Soil pollution, Airports, United States—Alaska—Farewell

50-2486
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Dorava, J.M., Murray, R.P., *U.S. Geological Survey. Open-file report,* 1995, No.95-176, 8p., 13 refs.
Water supply, Water reserves, Hydrogeology, Hydrogeochemistry, Water chemistry, Water pollution, Soil pollution, Airports, United States—Alaska—Hinchinbrook Island

50-2487
Overview of environmental and hydrogeologic conditions at Puntilla Lake, Alaska.
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Water supply, Water reserves, Hydrogeology, Hydrogeochemistry, Water chemistry, Water pollution, Soil pollution, Airports, United States—Alaska—Puntilla Lake

50-2488
Overview of environmental and hydrogeologic conditions at Nome, Alaska.
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50-2489
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Water supply, Water reserves, Hydrogeology, Hydrogeochemistry, Water chemistry, Water pollution, Soil pollution, Airports, United States—Alaska—Cold Bay

50-2490
Overview of environmental and hydrogeologic conditions near Big Delta, Alaska.
Nelson, G.L., *U.S. Geological Survey. Open-file report,* 1995, No.95-180, 11p., 24 refs.
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50-2491
Overview of environmental and hydrogeologic conditions near Petersburg, Alaska.
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Overview of environmental and hydrogeologic conditions at Bettles Field, Alaska.
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Water supply, Water reserves, Hydrogeology, Hydrogeochemistry, Water chemistry, Water pollution, Soil pollution, Airports, United States—Alaska—Bettles Field

50-2493
Overview of environmental and hydrogeologic conditions at Wrangell, Alaska.
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Water supply, Water reserves, Hydrogeology, Hydrogeochemistry, Water chemistry, Water pollution, Soil pollution, Airports, United States—Alaska—Wrangell

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Water supply, Water reserves, Hydrogeology, Hydrogeochemistry, Water chemistry, Water pollution, Soil pollution, Airports, United States—Alaska—Sitka

50-2495
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Water supply, Water reserves, Hydrogeology, Hydrogeochemistry, Water chemistry, Water pollution, Soil pollution, Airports, United States—Alaska—Iliamna

50-2496
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Water supply, Water reserves, Hydrogeology, Hydrogeochemistry, Water chemistry, Water pollution, Soil pollution, Airports, United States—Alaska—Unalakleet

50-2497
Overview of environmental and hydrogeologic conditions at Chandalar Lake, Alaska.
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Water supply, Water reserves, Hydrogeology, Hydrogeochemistry, Water chemistry, Water pollution, Soil pollution, Airports, United States—Alaska—Chandalar Lake

50-2498
Iceberg furrows as paleowind indicators and icebergs as erosion and sedimentation agents in Lake Ojibway, Québec.
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Geological surveys, Glaciation, Glacial lakes, Icebergs, Ice scoring, Ice erosion, Ice rafting, Striations, Outwash, Lacustrine deposits, Paleoclimatology, Canada—Quebec

50-2499
Sequence of glacial ice flows in Abitibi-Timiskaming; implications for mineral exploration and dispersal of calcareous rocks from the Hudson Bay basin, Quebec and Ontario.
Veillette, J.J., McClenaghan, M.B., *Canada. Geological Survey. Open file,* 1996, No.3033, 1 sheet, Approx. 180 refs.
Geological surveys, Glaciation, Glacial geology, Glacial erosion, Glacial deposits, Glacial till, Moraines, Striations, Exploration, Minerals, Lithology, Geochemistry, Geochronology, Canada—Quebec, Canada—Ontario

50-2500
Ribbon track for tracked vehicles and snowmobiles. [Bändergleiskette für Kettenfahrzeuge und Schneemobile]
Wiesner, H.H., Spies, K., Oertgen, E., *European Patent Office. Patent,* July 12, 1990, 7p., EP 0 410 216 A1.
Tracked vehicles, Snow vehicles, Design, Equipment

50-2501
Summer wetlands in the frozen north.
Everett, K.R., *Geographical magazine,* Oct. 1983, 40(10), p.510-515.
Wetlands, Tundra terrain, Tundra vegetation

50-2502
Geophysical investigations of cryolithozone. Scientific papers. [Geofizicheskiĭ issledovaniia kriolitozony. Nauchnye trudy]
Frolov, A.D., ed, Moscow, RAN. Nauchnyĭ sovet po kriologii zemli, 1995, 206p., In Russian with Russian-English title page. Refs. passim. For individual papers see 50-2503 through 50-2517.
Geocryology, Geophysical surveys, Frozen rocks, Deformation, Frozen ground, Electromagnetic properties, Electromagnetic prospecting, Seismic surveys

50-2503
Development of geophysical studies of the cryolithozone. [Razvitie geofizicheskikh issledovaniĭ kriolitozony]
Frolov, A.D., Geofizicheskie issledovaniia kriolitozony. Nauchnye trudy (Geophysical investigations of the cryolithozone. Scientific papers). Edited by A.D. Frolov, Moscow, RAN. Nauchnyĭ sovet po kriologii zemli, 1995, p.5-11, In Russian. 18 refs.
Geophysical surveys, Geocryology, Research projects, History

50-2504
Evaluating the deformation and strength properties of frozen ground using an acoustic method. [Otsenka deformatsionnykh i prochnostnykh svoĭstv merzlykh gruntov akusticheskim metodom]
Zykov, IU.D., Cherevinskaia, O.P., Geofizicheskie issledovaniia kriolitozony. Nauchnye trudy (Geophysical investigations of the cryolithozone. Scientific papers). Edited by A.D. Frolov, Moscow, RAN. Nauchnyĭ sovet po kriologii zemli, 1995, p.12-22, In Russian.
Frozen ground strength, Deformation, Acoustics, Sands, Loams, Frozen ground physics, Stratification, Ground ice, Sound waves

50-2505
Review of the values of dynamic deformation characteristics of the rock foundations of structures in the cryolithozone. [Svodka znachenii dinamicheskikh deformatsionnykh kharakteristik skal'nykh osnovanii sooruzhenii v kriolitozone]
Voronkov, O.K., Motorin, G.A., Mikhaĭlovskiĭ, G.V., Kuntsevich, S.P., Geofizicheskie issledovaniia kriolitozony. Nauchnye trudy (Geophysical investigations of the cryolithozone. Scientific papers). Edited by A.D. Frolov, Moscow, RAN. Nauchnyĭ sovet po kriologii zemli, 1995, p.23-44, In Russian. 7 refs.
Geocryology, Foundations, Frozen rocks, Deformation, Analysis (mathematics), Hydraulic structures

50-2506
Forecasting seismic effects taking into consideration the near-surface inhomogeneities under cryolithozone conditions. [Prognoz seĭsmicheskikh vozdeĭstviĭ s uchetom pripoverkhnostnykh neodnorodnosteĭ v usloviiakh kriolitozony]
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Geocryology, Earthquakes, Frozen rocks, Frozen ground, Ground thawing, Seismic velocity, Engineering geology, Permafrost beneath structures

50-2507
Results of joint Russian-Canadian geophysical studies of permafrost on the Yamal Peninsula. [Rezul'taty sovmestnykh rossiĭsko-kanadskikh geofizicheskikh issledovaniĭ mnogoletneĭ merzloty na poluostrove IAmal]
Burns, R.A., et al, Geofizicheskie issledovaniia kriolitozony. Nauchnye trudy (Geophysical investigations of the cryolithozone. Scientific papers). Edited by A.D. Frolov, Moscow, RAN. Nauchnyĭ sovet po kriologii zemli, 1995, p.63-72, In Russian. 3 refs.
Geophysical surveys, Geocryology, Engineering geology, Permafrost physics, Electromagnetic prospecting, Seismic surveys, Seismic reflection, Russia—Yamal Peninsula

50-2508
Dielectric properties of frozen saline sands. [Dielektricheskie svoĭstva zasolenykh merzlykh peskov]
Frolov, A.D., Fediukin, I.V., Geofizicheskie issledovaniia kriolitozony. Nauchnye trudy (Geophysical investigations of the cryolithozone. Scientific papers). Edited by A.D. Frolov, Moscow, RAN. Nauchnyĭ sovet po kriologii zemli, 1995, p.73-94, In Russian. 12 refs.
Sands, Dielectric properties, Saline soils, Salinity, Frozen ground temperature

50-2509
Parameters of the distribution of electromagnetic waves in frozen ground. [Parametry rasprostraneniia elektromagnitnykh voln v merzlykh gruntakh]
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Electromagnetic properties, Frozen ground physics, Dielectric properties, Salinity, Saline soils, Temperature effects, Analysis (mathematics)

50-2510
Polarization of cryogenic rocks and its manifestation in electromagnetic sounding curves. [Poliarizatsiia kriogennykh porod i ee proiavleniia na krivykh elektromagnitnykh zondirovaniĭ]
Krylov, S.S., Bobrov, N.IU., Soroka, I.V., Geofizicheskie issledovaniia kriolitozony. Nauchnye trudy (Geophysical investigations of the cryolithozone. Scientific papers). Edited by A.D. Frolov, Moscow, RAN. Nauchnyĭ sovet po kriologii zemli, 1995, p.112-123, In Russian. 9 refs.
Frozen rocks, Electromagnetic prospecting, Polarization (waves)

50-2511
Electromagnetic methods in permafrost research. [Elektromagnitnye metody pri izyskaniiakh na merzlote]
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Electromagnetic prospecting, Permafrost physics, Geoelectricity, Geocryology

50-2512
Determining the anisotropy coefficient of the electrical resistivity of frozen ground in dry boreholes. [Opredelenie koeffitsienta anizotropii elektricheskogo soprotivleniia merzlykh porod v sukhikh skvazhinakh]
Velikin, S.A., Snegirev, A.M., Geofizicheskie issledovaniia kriolitozony. Nauchnye trudy (Geophysical investigations of the cryolithozone. Scientific papers). Edited by A.D. Frolov, Moscow, RAN. Nauchnyĭ sovet po kriologii zemli, 1995, p.136-152, In Russian. 10 refs.
Frozen ground physics, Electrical resistivity, Anisotropy, Boreholes, Analysis (mathematics)

50-2513
Corrosive aggressiveness of saline frozen ground with regard to steel (in the example of Yamal soil). [Korrozionnaia agressivnost' zasolennykh merzlykh gruntov po otnosheniiu k stali (na primere gruntov IAmala)]
Zykov, IU.D., Krasovskiĭ, A.G., Mozganova, E.IA., Geofizicheskie issledovaniia kriolitozony. Nauchnye trudy (Geophysical investigations of the cryolithozone. Scientific papers). Edited by A.D. Frolov, Moscow, RAN. Nauchnyĭ sovet po kriologii zemli, 1995, p.153-165, In Russian. 4 refs.
Frozen ground mechanics, Frozen ground physics, Saline soils, Corrosion, Sands, Russia—Yamal Peninsula

50-2514
Analyzing the information content of various methods of electrometry in studying the dynamics of seasonal freezing and thawing. [Otsenka informativnosti razlichnykh metodov elektrometrii pri izuchenii dinamiki sezonnogo promerzaniia i ottaivaniia]
Boĭkov, S.A., Snegirev, A.M., Geofizicheskie issledovaniia kriolitozony. Nauchnye trudy (Geophysical investigations of the cryolithozone. Scientific papers). Edited by A.D. Frolov, Moscow, RAN. Nauchnyĭ sovet po kriologii zemli, 1995, p.166-185, In Russian.
Seasonal freeze thaw, Freeze thaw cycles, Electromagnetic properties, Electrical measurement, Frozen ground physics

50-2515
Observations of the geophysical regime as an element in geocryological monitoring. [Rezhimnye geofizicheskie nabliudeniia kak element geokriologicheskogo monitoringa]
Baulin, IU.I., Zykov, E.IA., Geofizicheskie issledovaniia kriolitozony. Nauchnye trudy (Geophysical investigations of the cryolithozone. Scientific papers). Edited by A.D. Frolov, Moscow, RAN. Nauchnyĭ sovet po kriologii zemli, 1995, p.186-190, In Russian.
Geophysical surveys, Geocryology, Seismic surveys, Electromagnetic prospecting, Geoelectricity

50-2516
Dipole-axis sounding with noncontact measurement of an electrical field (DOZ-BIEP) and its use in studying the cryolithozone. [Dipol'no-osevoe zondirovanie s beskontaktnym izmereniem elektricheskogo polia (DOZ-BIEP) i ego primenenie pri izuchenii kriolitozony]
Shubin, A.B., Geofizicheskie issledovaniia kriolitozony. Nauchnye trudy (Geophysical investigations of the cryolithozone. Scientific papers). Edited by A.D. Frolov, Moscow, RAN. Nauchnyĭ sovet po kriologii zemli, 1995, p.191-200, In Russian. 8 refs.
Electric fields, Electrical measurement, Geocryology, Geoelectricity, Electromagnetic prospecting

50-2517
Question of integrated electromagnetic and seismic studies of frozen rocks in placer mines. [K voprosu o kompleksirovanii elektromagnitnykh i seĭsmicheskikh issledovaniĭ merzlykh porod na rossypnykh mestorozhdeniiakh]
Khachaĭ, O.A., Novgorodova, E.N., Bakaev, V.P., Bodin, V.V., Geofizicheskie issledovaniia kriolitozony. Nauchnye trudy (Geophysical investigations of the cryolithozone. Scientific papers). Edited by A.D. Frolov, Moscow, RAN. Nauchnyĭ sovet po kriologii zemli, 1995, p.201-207, In Russian. 6 refs.
Electromagnetic prospecting, Seismic surveys, Frozen rocks, Placer mining

50-2518
Hydrometeorological regime of lakes and reservoirs in the USSR: reservoirs of Central Asia. [Gidrometeorologicheskiĭ rezhim ozer i vodokhranilishch SSSR: vodokhranilishcha Sredneĭ Azii]
Nikitin, A.M., Leningrad, Gidrometeoizdat, 1991, 164p., In Russian. 160 refs.
Hydrology, Meteorology, Reservoirs, Water chemistry, Water balance, Ice cover, CIS—Central Asia

50-2519
A first for Russia: thermoshrinking tape for pipelines. [Vpervye v Rossii: termousazhivaiushchaiasia lenta dlia truboprovodov]
Rastrigin, I.I., Shishov, V.N., Mazur, A.I., *Stroitel'stvo truboprovodov,* Nov.-Dec. 1995, No.6, p.14-16, In Russian.
Pipelines, Pipeline insulation, Cold weather operation

50-2520
Years. Activities. People (part five). [Gody. Dela. Liudi (ocherk piatyĭ)]
Ivantsov, O.M., *Stroitel'stvo truboprovodov,* Nov.-Dec. 1995, No.6, p.17-24, In Russian.
Pipelines, Gas pipelines, Cold weather operation, Cost analysis, Northern Sea Route

50-2521
Statistical seasonal analysis of winter decreases in ozone at Macquarie Island.
Lehmann, P., *Geophysical research letters,* Mar. 1, 1994, 21(5), p.381-384, 10 refs.
Ozone, Seasonal variations, Atmospheric composition, —Macquarie Island
The change in total ozone between the seasonal periods Apr. to June and July to Sep. at Macquarie I. are shown to be highly statistically significant during the latter half of the 1980s when compared to the seasonal changes observed over the period 1963-79. These results support a previous analysis by the author which indicated significant winter ozone decreases using a less rigorous method and a shorter time series. (Auth.)

50-2522
High resolution study of the platelet ice ecosystem in McMurdo Sound, Antarctica: biomass, nutrient, and production profiles within a dense microalgal bloom.
Arrigo, K.R., Dieckmann, G.S., Gosselin, M., Robinson, D.H., Fritsen, C.H., Sullivan, C.W., *Marine ecology progress series,* Nov. 2, 1995, 127(1-3), p.255-268, Refs. p.267-268.
Marine biology, Algae, Sea ice, Biomass, Ice composition, Ice crystals, Nutrient cycle, Cryobiology, Antarctica—McMurdo Sound
Vertical distributions of inorganic nutrients (nitrate, nitrite, ammonium, phosphate, and silicic acid) and microalgal and bacterial biomass were monitored within both the lower congelation ice and the platelet ice layer in McMurdo Sound from Oct. 31 to Dec. 3, 1989. Profiles of dissolved organic matter (DOM) (amino acids and simple sugars) and heterotrophic protists were also obtained in early Dec. Microalgal standing crop increased from 9.4 to 37.4 g C/m^2 during the 34 d study and maximum pigment concentrations exceeded 6500 mg chl *a*/m^3 near the congelation ice/platelet ice interface. Estimates of seawater exchange within the platelet ice ranged from 0.06 to 0.61 m^2/d when $Si(OH)_4$ was used as a tracer. The biochemical composition of the autotrophic community and the presence of high nutrient concentrations within the platelet layer indicated that the growth of platelet ice algae was limited by light, rather than nutrients, throughout the season. NO_3 and $Si(OH)_4$ concentrations in the platelet ice were generally high, but became depleted in the uppermost layers as chl *a* peaked late in Nov. NH_4 was far more abundant in the platelet ice than in the underlying water column throughout the field season. Microbial regeneration was primarily responsible for the high background concentrations of NH_4 in the platelet ice. (Auth. mod.)

50-2523

Mending the ozone hole: science, technology, and policy.

Makhijani, A., Gurney, K.R., Cambridge, MA, MIT Press, 1995, 355p., Summary and recommendation chapters are included along with model details and results and chapter notes. Refs. p.318-344.
DLC QC879.7.M34 1995

Atmospheric composition, Air pollution, Ozone, Stratosphere

Antarctic references are generally confined to the first two chapters. Summary points are listed in Ch. 14; they include: Ozone-layer damage is serious. Improvement will not begin until the early years of the 21st century; UVR is now showing annual increases over populated locations; health, economic, and environmental consequences could be severe; Third World declines in ODC are likely to be delayed approximately 10 years; HCFCs are more damaging than has generally been assumed; production and emissions of HCFCs are increasing; enough alternative chemicals, processes, and technologies are available to accelerate HCFC phaseouts; existing equipment will soon be the dominant source of ODC emissions; more stringent regulation of methyl bromide is needed; anthropogenic biomass burning contributes to the buildup of atmospheric chlorine and bromine; the use of waste heat in air conditioning could eliminate ODCs from many A/C applications.

50-2524

Frozen ground strength characterization and grouser cutter design for hardening transition, and mobility over snow covered terrain for the mobile test bed. Final draft report.

Chamberlain, E.J., Mellor, M., Abele, G., MP 3761, U.S. Army Cold Regions Research and Engineering Laboratory, Hanover, Oct. 1988, 35p. + appends., 3 refs.

Military equipment, Frozen ground mechanics, Frozen ground strength, Shear strength, Particle size distribution, Mechanical tests, Vehicles, Stability, Cold weather performance, Cold weather tests, Traction, Snow cover effect, Ice solid interface

During the winter season of 1987-1988, CRREL staff participated in the continuing evaluation of the mobility and hardening capabilities of the Air Force Ballistic Office's (BMO) Mobile Test Bed (MTB), a pre-prototype model of the Hard Mobile Launcher (HML) being evaluated for deployment under the U.S. Air Force Small ICBM Program. This was the second winter test in Montana for which CRREL was contracted with by BMO to help in the evaluation of the performance of this vehicle under winter conditions. In the event of an alert for an incoming missile, the HML is required to make a dash on gravel roads with a missile payload to seek a site to harden and survive an air blast. Assistance was requested in three specific technical areas: 1) characterization of the variation of strength during the winter months for on- and off-road sites; 2) evaluation of hardening transition activities including the design of cutters to emplace grousers located on the underside of the HML into frozen soil and gravel; and 3) on- and off-road mobility in snow covered terrain. These tasks were of particular importance because the HML was originally designed for non-cohesive soils and warmer temperatures of the desert southwest, not for the cohesive clays and clayey gravels of Montana that can have very high strengths when frozen, and not for snow cover that can make traction very difficult.

50-2525

Numerical simulations of the synoptic conditions and development of arctic outbreak polar lows.

Grønås, S, Kvamstø, N.G., *Tellus*, Oct. 1995, 47A(5:1), p.797-814, 44 refs.

Climatology, Polar atmospheres, Atmospheric physics, Fronts (meteorology), Atmospheric disturbances, Atmospheric pressure, Turbulent boundary layer, Classifications, Synoptic meteorology, Stability, Convection, Mathematical models

50-2526

Origin and structure of a numerically simulated polar low over Hudson Bay.

Albright, M.D., Reed, R.J., Ovens, D.W., *Tellus*, Oct. 1995, 47A(5:1), p.834-848, 24 refs.

Synoptic meteorology, Turbulent boundary layer, Atmospheric disturbances, Fronts (meteorology), Atmospheric pressure, Mathematical models, Simulation, Ice cover effect, Ice edge, Air ice water interaction, Heat flux, Canada—Hudson Bay

50-2527

POST: Polar Stratospheric Telescope.

Bely, P.Y., Ford, H.C., Burg, R., Petro, L., White, R., Bally, J., *Space science reviews*, Oct. 1995, 74(1-2), p.101-112, 8 refs.

Atmospheric physics, Polar atmospheres, Stratosphere, Turbulence, Remote sensing, Instruments, Imaging, Light transmission, Optical properties, Infrared reconnaissance, Balloons, Design

50-2528

Coupled response of late glacial climatic shifts of northwest Europe reflected in Greenland ice cores: evidence from the northern North Sea.

Haflidason, H., Sejrup, H.P., Kristensen, D.K., Johnsen, S., *Geology*, Dec. 1995, 23(12), p.1059-1062, 26 refs.

Paleoclimatology, Surface temperature, Climatic changes, Ocean currents, Ice sheets, Glacier oscillation, Ice cores, Stratigraphy, Volcanic ash, Isotope analysis, Correlation, Greenland

50-2529

Mapping the architecture of glaciofluvial sediments with three-dimensional georadar.

Beres, M., Green, A., Huggenberger, P., Horstmeyer, H., *Geology*, Dec. 1995, 23(12), p.1087-1090, 11 refs.

Glacial geology, Glacial deposits, Outwash, Lithology, Subsurface investigations, Radar echoes, Sensor mapping, Profiles, Image processing, Resolution

50-2530

Glacial removal of late Cenozoic subglacially emplaced volcanic edifices by the West Antarctic ice sheet.

Behrendt, J.C., Blankenship, D.D., Damaske, D., Cooper, A.K., *Geology*, Dec. 1995, 23(12), p.1111-1114, 15 refs.

Pleistocene, Glacial geology, Glacial erosion, Subglacial observations, Magma, Sediment transport, Geomagnetism, Gravity, Geological surveys, Antarctica—West Antarctica

Local maxima of the horizontal gradient of pseudogravity from closely spaced aeromagnetic surveys over the Ross Sea, northwestern Ross Ice Shelf, and the West Antarctic ice sheet, reveal a linear magnetic rift fabric and numerous subcircular, high-amplitude anomalies. Some of these volcanic structures penetrate the Neogene sediments beneath the deglaciated continental shelf and are present at the base of the present grounded ice sheet and beneath the ice shelf. Geophysical data indicate two or three youthful volcanic edifices at widely separated areas beneath the sea and ice cover in the West Antarctic rift system. Magnetic models, controlled by marine seismic reflection and radar ice-sounding data, allow the inference that glacial removal of the associated late Cenozoic volcanic edifices (probably debris, comprising pillow breccias and hyaloclastites) has occurred essentially concomitantly with their subglacial eruption. The exposed volcanoes may have been protected from erosion by the surrounding ice sheet because of more competent rock or high elevation above the ice sheet. Glacial removal may be the general case; exposed late Cenozoic volcanic peaks and outcrops, consisting primarily of flows which erupted during antarctic glacial conditions since 30 Ma, may be the exceptions. (Auth. mod.)

50-2531

Avalanche survival chances.

Falk, M., Brugger, H., Adler-Kastner, L., *Nature*, Mar. 3, 1994, 368(6466), p.21, 7 refs.

Avalanches, Survival, Switzerland—Alps

50-2532

Alternative road construction for stormwater management in cold climates.

Stenmark, C., *Water science & technology*, July 1995, 32(1), NOVATECH Conference on Innovative Technologies in Urban Storm Drainage, 2nd, Lyon, France, May 30-June 1, 1995. Selected proceedings, p.79-84, 8 refs.

Cold weather construction, Road maintenance, Bitumens, Seepage, Permeability, Snowmelt, Meltwater, Runoff, Water transport, Frost heave, Frost penetration, Cold weather performance, Municipal engineering

50-2533

Thermohaline characteristics of the shelf fronts in the western Bering Sea.

Verkhunov, A.V., *Oceanology*, Dec. 1994, 34(3), p.321-333, Translated from Okeanologiia. 10 refs.

Oceanography, Oceanographic surveys, Ocean currents, Boundary layer, Temperature distribution, Salinity, Fluid dynamics, Hydrography, Bering Sea

50-2534

Comparative characteristics of polychaete taxocenes in Pevek Strait, Chaun Bay, and Long Strait.

Gagaev, S.IU., *Oceanology*, Dec. 1994, 34(3), p.361-366, Translated from Okeanologiia. 18 refs.

Marine biology, Bottom sediment, Ecosystems, Sampling, Dredging, Biomass, Classifications, Biogeography, Arctic Ocean

50-2535

Recent history of the Bering Strait.

Svitoch, A.A., Taldenkova, E.E., *Oceanology*, Dec. 1994, 34(3), p.400-404, Translated from Okeanologiia. 27 refs.

Marine geology, Pleistocene, Oceanography, Hydrology, Water transport, Sea level, Periodic variations, Tectonics, Bering Strait

50-2536

Peculiarities of diatom thanatocenoses formation in the sediments of the Eurasian arctic seas.

Poliakova, E.I., *Oceanology*, Dec. 1994, 34(3), p.405-414, Translated from Okeanologiia. 11 refs.

Oceanography, Marine biology, Bottom sediment, Sedimentation, Ocean currents, Plankton, Sampling, Distribution, Arctic Ocean

50-2537

Norway entices exploration groups with improved licensing terms. *Offshore*, Oct. 1995, 55(10), p.115-116.

Oceanography, Offshore drilling, Hydrocarbons, Petroleum industry, Exploration, Geophysical surveys, Natural resources, Barents Sea

50-2538

Climate, snow cover, glaciers, and runoff in the Tien Shan, central Asia.

Aĭzen, V.B., Aĭzen, E.M., Melack, J.M., *Water resources bulletin*, Dec. 1995, 31(6), p.1113-1129, 32 refs.

Mountains, River basins, Climatology, Precipitation (meteorology), Seasonal variations, Hydrologic cycle, Runoff, Hydrography, Glacier melting, Snowmelt, Snow cover effect, Snow water equivalent, Russia—Tien Shan

50-2539

Detection and prediction of hail with Meteosat data. [Erkennung und Vorhersage von Hagel mit Meteosat-Daten]

Messmer, B., Kolendowicz, L., Schmid, W., *Meteorologische Zeitschrift*, 1995, 4(5), p.187-195, In German with English summary. 26 refs.

Precipitation (meteorology), Spaceborne photography, Remote sensing, Radar echoes, Infrared reconnaissance, Cloud cover, Storms, Ice detection, Hail, Storms, Weather forecasting, Data processing

50-2540

Growth and allocation of the arctic sedges *Eriophorum angustifolium* and *E. vaginatum*: effects of variable soil oxygen and nutrient availability.

Gebauer, R.L.E., Reynolds, J.F., Tenhunen, J.D., *Oecologia*, Nov. 1995, 104(3), p.330-339, 66 refs.

Plant ecology, Plant physiology, Ecosystems, Tundra soils, Aeration, Flooding, Saturation, Tundra vegetation, Biomass, Growth, Nutrient cycle, Simulation

50-2541

New geophysical results from the south-western Eurasian Basin (Morris Jesup Rise, Gakkel Ridge, Yermak Plateau) and the Fram Strait.

Jokat, W., Weigelt, E., Kristoffersen, Y., Rasmussen, T., Schöne, T., *Geophysical journal international*, Nov. 1995, 123(2), p.601-610, 18 refs.

Oceanography, Oceanographic surveys, Geophysical surveys, Seismic reflection, Profiles, Ocean bottom, Bottom topography, Tectonics, Geologic structures, Fram Strait

50-2542

Age models, sediment fluxes and palaeoclimatic reconstructions for the Chinese loess and palaeosol sequences.

Thompson, R., Maher, B.A., *Geophysical journal international,* Nov. 1995, 123(2), p.611-622, 37 refs.

Paleoclimatology, Climatic changes, Precipitation (meteorology), Geochronology, Loess, Eolian soils, Soil dating, Sedimentation, Stratigraphy, Magnetic properties, Isotope analysis, Correlation, China

50-2543

Examining the use of time domain reflectometry for measuring liquid water content in frozen soil.

Spaans, E.J.A., Baker, J.M., *Water resources research,* Dec. 1995, 31(12), p.2917-2925, 28 refs.

Frozen ground physics, Soil science, Soil tests, Electric fields, Dielectric properties, Water content, Soil freezing, Ice water interface, Soil water migration, Porosity

50-2544

Scaling of input data for macroscale hydrologic modeling.

Kite, G.W., *Water resources research,* Nov. 1995, 31(11), p.2769-2781, 35 refs.

Hydrologic cycle, Water balance, Watersheds, Climatology, Snowmelt, Snow water equivalent, Snow cover effect, Vegetation patterns, Runoff forecasting, Simulation, Models

50-2545

Processes controlling the chemistry of two snowmelt-dominated streams in the Rocky Mountains.

Campbell, D.H., Clow, D.W., Ingersoll, G.P., Mast, M.A., Spahr, N.E., Turk, J.T., *Water resources research,* Nov. 1995, 31(11), p.2811-2821, 30 refs.

Watersheds, Alpine landscapes, Stream flow, Hydrography, Snow hydrology, Snow composition, Snowmelt, Soil water migration, Weathering, Hydrogeochemistry, Sampling, Ion density (concentration), Seasonal variations

50-2546

Late Weichselian glacial maximum on Andøya, north Norway.

Møller, J.J., Danielsen, T.K., Fjalstad, A., *Boreas,* Mar. 1, 1992, 21(1), p.1-13, 37 refs.

Pleistocene, Glacial geology, Moraines, Marine geology, Sedimentation, Stratigraphy, Glaciation, Radioactive age determination, Geochronology, Norway—Andøya

50-2547

Lake Torfadalsvatn: a high resolution record of the North Atlantic ash zone I and the last glacial-interglacial environmental changes in Iceland.

Björck, S., Ingólfsson, O., Haflidason, H., Hallsdóttir, M., Anderson, N.J., *Boreas,* Mar. 1, 1992, 21(1), p.15-22, 38 refs.

Quaternary deposits, Volcanic ash, Geochemistry, Lacustrine deposits, Stratigraphy, Geochronology, Paleoclimatology, Paleoecology, Iceland—Torfadalsvatn, Lake

50-2548

Skógar Tephra, a Younger Dryas marker in North Iceland.

Norddahl, H., Haflidason, H., *Boreas,* Mar. 1, 1992, 21(1), p.23-41, 68 refs.

Pleistocene, Quaternary deposits, Glacial geology, Glacier oscillation, Glacial deposits, Volcanic ash, Outwash, Glacial lakes, Lacustrine deposits, Stratigraphy, Geochronology, Iceland

50-2549

Late Pleistocene equilibrium-line reconstructions in the northern Peruvian Andes.

Rodbell, D.T., *Boreas,* Mar. 1, 1992, 21(1), p.43-52, 28 refs.

Pleistocene, Paleoclimatology, Air temperature, Temperature effects, Mountain glaciers, Snow line, Glacial geology, Glacier oscillation, Glacier mass balance, Moraines, Altitude, Peru—Andes Mountains

50-2550

Lobal interactions and rheologic superposition in subglacial till near Bradtville, Ontario, Canada.

Hicock, S.R., *Boreas,* Mar. 1, 1992, 21(1), p.73-88, 59 refs.

Pleistocene, Glacial geology, Glacial deposits, Deformation, Glacier flow, Viscous flow, Subglacial observations, Sediment transport, Rheology, Lithology, Rock properties, Ice solid interface, Canada—Ontario—Bradtville

50-2551

Radiocarbon dating of the Goti-Finiglacial boundary of the Swedish Time Scale.

Brunnberg, L., Possnert, G., *Boreas,* Mar. 1, 1992, 21(1), p.89-96, 32 refs.

Geochronology, Pleistocene, Lacustrine deposits, Radioactive age determination, Age determination, Correlation, Accuracy, Sweden

50-2552

Terrestrial molluscs as indicators of global aeolian dust fluxes during glacial states.

Rousseau, D.D., *Boreas,* June 1, 1992, 21(2), p.105-109, 16 refs.

Paleoclimatology, Climatic changes, Loess, Eolian soils, Sampling, Paleoecology, Ice cores, Correlation

50-2553

Early Weichselian interstadial land biotas at Thule, northwest Greenland.

Bennike, O., Böcher, J., *Boreas,* June 1, 1992, 21(2), p.111-117, 23 refs.

Paleoecology, Paleoclimatology, Paleobotany, Marine deposits, Classifications, Subarctic landscapes, Greenland—Thule

50-2554

Sedimentary environments associated with glacial Lake Trimingham, Norfolk, UK.

Hart, J.K., *Boreas,* June 1, 1992, 21(2), p.119-136, 56 refs.

Pleistocene, Glacier oscillation, Glacial lakes, Ice dams, Glacial geology, Lacustrine deposits, Sedimentation, Moraines, Stratigraphy, Scanning electron microscopy, Sampling, United Kingdom—Norfolk

50-2555

Late Weichselian marine stratigraphy of the southern Kattegat, Scandinavia: evidence for drainage of the Baltic Ice Lake between 12,700 and 10,300 years BP.

Bergsten, H., Nordberg, K., *Boreas,* Sep. 1, 1992, 21(3), p.223-252, 91 refs.

Pleistocene, Quaternary deposits, Marine geology, Marine deposits, Glacial lakes, Drainage, Stratigraphy, Paleoecology, Classifications, Geochronology

50-2556

Pleistocene stratigraphy in the Lappajärvi meteorite crater in Ostrobothnia, Finland.

Salonen, V.P., Eriksson, B., Grönlund, T., *Boreas,* Sep. 1, 1992, 21(3), p.253-269, 62 refs.

Pleistocene, Quaternary deposits, Glacial deposits, Sedimentation, Drill core analysis, Stratigraphy, Lithology, Paleoecology, Palynology, Finland

50-2557

Late Quaternary foraminiferal stratigraphy from western Svalbard.

Lycke, A.K., Mangerud, J., Sejrup, H.P., *Boreas,* Sep. 1, 1992, 21(3), p.271-288, 74 refs.

Marine geology, Marine deposits, Marine biology, Pleistocene, Quaternary deposits, Paleoecology, Classifications, Sampling, Correlation, Stratigraphy, Norway—Svalbard

50-2558

Weichselian glacial history of the Svalbard area: correlating the marine and terrestrial records.

Hebbeln, D., *Boreas,* Sep. 1, 1992, 21(3), p.295-304, 36 refs.

Pleistocene, Marine geology, Marine deposits, Bottom sediment, Quaternary deposits, Glaciation, Ice rafting, Glacial deposits, Stratigraphy, Isotope analysis, Geochronology, Correlation, Norway—Svalbard

50-2559

Early Weichselian interstadial sediments at Härnösand, Sweden.

García Ambrosiani, K., Robertsson, A.M., *Boreas,* Dec. 1, 1992, 21(4), p.305-317, 81 refs.

Pleistocene, Quaternary deposits, Glacial deposits, Paleoecology, Tundra terrain, Stratigraphy, Sampling, Sweden

50-2560

Holocene lake-level fluctuations in Jura and the northern subalpine ranges, France: regional pattern and climatic implications.

Magny, M., *Boreas,* Dec. 1, 1992, 21(4), p.319-334, 61 refs.

Quaternary deposits, Lacustrine deposits, Paleoclimatology, Glacier oscillation, Climatic changes, Lakes, Water level, Periodic variations, Correlation, Radioactive age determination, Switzerland—Jura Mountains

50-2561

Gould Pond, Maine: late-glacial transitions from marine to upland environments.

Anderson, R.S., Jacobson, G.L., Jr., Davis, R.B., Stuckenrath, R., *Boreas,* Dec. 1, 1992, 21(4), p.359-371, 38 refs.

Paleoecology, Pleistocene, Quaternary deposits, Sedimentation, Lacustrine deposits, Radioactive age determination, Stratigraphy, Glacier oscillation, Isostasy, United States—Maine

50-2562

Preparing pollen concentrates for AMS dating—a methodological study from a hard-water lake in southern Sweden.

Regnéll, J., *Boreas,* Dec. 1, 1992, 21(4), p.373-377, 25 refs.

Paleoecology, Pleistocene, Geochronology, Quaternary deposits, Lacustrine deposits, Palynology, Radioactive age determination, Correlation, Sweden

50-2563

Carbonates, granulometry, and color of tills on the south-central Canadian Shield and their implications for stratigraphy and radiocarbon dating.

Karrow, P.F., *Boreas,* Dec. 1, 1992, 21(4), p.379-391, 70 refs.

Pleistocene, Glacial geology, Quaternary deposits, Glacial deposits, Physical properties, Sampling, Radioactive age determination, Geochronology, Accuracy, Correlation, Canada

50-2564

Climatic significance of the ostracode fauna from the Pliocene Kap København Formation, north Greenland.

Brouwers, E.M., Jørgensen, N.O., Cronin, T.M., *Micropaleontology,* Sep. 26, 1991, 37(3), p.245-267, 45 refs.

Paleoecology, Paleoclimatology, Marine deposits, Classifications, Quaternary deposits, Sedimentation, Stratigraphy, Climatic changes, Correlation, Greenland

50-2565

Evidence for Cenozoic crustal extension in the Bering Sea region.

Cooper, A.K., Marlow, M.S., Scholl, D.W., Stevenson, A.J., *Tectonics,* Aug. 1992, 11(4), p.719-731, 40 refs.

Marine geology, Geophysical surveys, Pleistocene, Tectonics, Geologic processes, Geologic structures, Fracture zones, Models, Seismic surveys, Bering Sea

50-2566

Enhanced preservation of volatile organic compounds in soil with sodium bisulfate.

Hewitt, A.D., SR 95-26, *U.S. Army Cold Regions Research and Engineering Laboratory. Special report,* Nov. 1995, 15p., ADA-302 930, 21 refs.

Soil pollution, Preserving, Laboratory techniques, Soil analysis

Sodium bisulfate ($NaHSO_4$) was evaluated as a means of chemically preserving soil samples to prevent the microbiological degradation of volatile organic compounds (VOCs). Laboratory sample treatment consisted of spiking soil samples held in glass ampoules with aqueous solutions containing eight different VOCs or gasoline and then sealing them to eliminate volatilization. Samples preserved with $NaHSO_4$ were held at room temperature (22°C), while equal

numbers of unpreserved samples were stored refrigerated (4°C) and at room temperature. Results show that concentrations of all of the halogenated hydrocarbons tested (14) remain fairly constant, independent of temperature or preservation. In contrast, all the aromatic hydrocarbons (10) tested as separate analytes, or ones that could easily be identified in gasoline, experienced a complete (>95%) loss when held for nine days at room temperature. Refrigeration reduced the rate of biodegradation, but two aromatic hydrocarbons showed substantial losses (>80%) within the currently recommended 14-day holding period. Over a 28-day refrigerated period, reductions of greater than 95% occurred for 9 of 10 aromatic hydrocarbons tested. With the exception of styrene, chemical preservation by introducing $NaHSO_4$ mitigated the loss of all of aromatic hydrocarbons tested over a 28-day holding period when samples were stored at room temperature. Therefore, $NaHSO_4$ preservation is one way of effectively eliminating biodegradation of VOCs in soil samples intended for low level (<1 µg/g) analysis.

50-2567

Pedologic, isotopic and microbiological properties of antarctic soils.

Bölter, M., Blume, H.P., Erlenkeuser, H., *Polarforschung*, 1995(Pub. 1994), 64(1), p.1-7, With German summary. 41 refs.

Soil microbiology, Geocryology, Geochemistry, Antarctica—King George Island, Antarctica—Casey Station, Antarctica—Wilkes Land

Soils from the maritime (Arctowski Station, King George I.) and coastal continental (Casey Station, Wilkes Land) antarctic region are described with respect to pedology, isotopic and microbial environments. They are classified as leptosols, regosols, podzols, and histosols. Only surface layers (1-3 cm) contain sufficient organic material to provide a favorable environment for microbial communities and, further, for accumulations of organic matter. Variability of biological and chemical properties is high on a centimeter scale with depth and in the range of decimeters in horizontal scales. (Auth.)

50-2568

Marine seismic profiling in ice covered regions.

Jokat, W., Buratsev, V.IU., Miller, H., *Polarforschung*, 1995(Pub. 1994), 64(1), p.9-17, With German summary. 18 refs.

Sea ice distribution, Seismic surveys, Polar regions, Arctic Ocean

50-2569

Early stages of plant recovery on tracked vehicle paths in the High Arctic (West Coast of Vestspitsbergen).

Koroleva, N.E., *Polarforschung*, 1995(Pub. 1994), 64(1), p.19-25, With German summary. 29 refs.

Plants (botany), Tundra, Tracked vehicles, Revegetation, Arctic Ocean, Norway—Spitsbergen

50-2570

Research on Antarctic Shallow Coastal and Littoral Systems (RASCALS). [Untersuchungen zur Struktur und Dynamik eines antarktischen Küstenökosystems]

Klöser, H., Arntz, W.E., *Polarforschung*, 1995(Pub. 1994), 64(1), p.27-41, In German with English summary. 154 refs.

Ecosystems, Climatic changes, Models, Antarctica—King George Island

Due to its long and independent development under comparatively constant environmental conditions, the ecosystem of the southern ocean may be extremely sensitive to disturbance, particularly in the coastal areas. Therefore, within the concerns of expected global climate changes, scientific interest in the coastal antarctic ecosystem has increased considerably. However, up to now there has not been a complex ecosystem approach which integrates individual results into a comprehensive framework. Since 1991, this method has been realized by the German-Argentinian program "RASCALS" on King George I. The aim of the program is to elucidate structures and dynamics of the coastal communities. A limited area is analyzed in great detail, covering as many aspects as possible. Results are fed into a model, which will allow many predictions about the consequences of global climate change for the antarctic coasts. (Auth. mod.)

50-2571

Rapid collapse of northern Larsen Ice Shelf, Antarctica.

Rott, H., Skvarca, P., Nagler, T., *Science*, Feb. 9, 1996, 271(5250), p.788-792, 20 refs.

Ice shelves, Ice breakup, Mass balance, Antarctica—Larsen Ice Shelf, Antarctica—Jason Peninsula, Antarctica—Robertson Island, Antarctica—Sobral Peninsula

In Jan. 1995, 4200 sq km of the northern Larsen Ice Shelf, Antarctic Peninsula, broke away. Radar images from the ERS-1 satellite, complemented by field observations, showed that the two northernmost sections of the ice shelf fractured and disintegrated almost completely within a few days. This breakup followed a period of steady retreat that coincided with a regional trend of atmospheric warming. The observations imply that after an ice shelf retreats beyond a critical limit, it may collapse rapidly as a result of perturbed mass balance. (Auth.)

50-2572

Evidence for the presence of polycyclic aromatic hydrocarbons in the polar atmosphere and in the polar ice of Greenland.

Masclet, P., Hoyau, V., Jaffrezo, J.L., Legrand, M., *Analusis*, Aug. 1995, 23(6), p.250-252, With French summary. 7 refs.

Ice sheets, Ice composition, Hydrocarbons, Atmospheric composition, Greenland

50-2573

Impact of ultraviolet-B radiation on photosystem II activity and its relationship to the inhibition of carbon fixation rates for antarctic ice algae communities.

Schofield, O., Kroon, B.M.A., Prézelin, B.B., *Journal of phycology*, Oct. 1995, 31(5), p.703-715, Refs. p.714-715.

Ozone, Algae, Ultraviolet radiation, Photosynthesis, Antarctica—Palmer Station

One goal of the Icecolors 1993 study was to determine whether or not photosystem II (PSII) was a major target site for photoinhibition by ultraviolet-B radiation (Q_{UVB}, 280-320 nm) in natural communities. Second, the degree to which Q_{UVB} inhibition of PSII could account for Q_{UVB} effects on whole cell rates of carbon fixation in phytoplankton was assessed. On Oct. 1, 1993, at Palmer Station, dense samples of a frazil ice algal community were collected and maintained outdoors in the presence or absence of Q_{UVB} and/or ultraviolet-A (Q_{UVA}, 320-400 nm) radiation. Samples were then collected at intervals over the day to track the time course of UV inhibition of primary production. The ice algae were assessed for changes in pigment composition and rates of carbon fixation. Fluorescence overestimated the observed Q_{UVB} inhibition in measured carbon fixation rates by 8% in the morning hours; the discrepancy increased during the afternoon. Therefore, researchers should be cautious in using fluorescence measurements to infer ultraviolet inhibition for rates of carbon fixation until there is a greater understanding of the coupling of carbon metabolism to PSII activity for natural populations. (Auth. mod.)

50-2574

Proceedings of the NIPR Symposium on Polar Meteorology and Glaciology, No.9.

Watanabe, O., ed, NIPR Symposium on Polar Meteorology and Glaciology, 17th, Tokyo, July 13-14, 1994, Tokyo, National Institute of Polar Research, 1995, 209p., Refs. passim. For selected papers see F-54243, F-54244, F-54246, F-54247, F-54249, F-54251, I-54245, I-54248, I-54250 or 50-2575 through 50-2581.

Glaciology, Meteorological data, Sea ice, Air ice water interaction, Solar radiation, Antarctica—Showa Station, Antarctica—Mizuho Station

This is a collection of papers presented at the 17th Symposium on Polar Meteorology and Glaciology held in Tokyo on July 13-14, 1994. It consists of 15 full-length papers, 9 pertinent to Antarctica, and 24 abstracts; the former were refereed and are arranged in the order of scientific areas of glaciology, physical oceanography and meteorology.

50-2575

Preliminary measurement of high-frequency electrical conductivity of antarctic ice with AC-ECM technique.

Sugiyama, K., Fujita, S., Sueoka, S., Mae, S., Hondoh, T., NIPR Symposium on Polar Meteorology and Glaciology, Proceedings. No.9, Tokyo, National Institute of Polar Research, 1995, p.12-22, 14 refs.

Ice sheets, Electrical resistivity, Impurities, Volcanic ash, Electrical measurement, Experimentation

High-frequency electrical conductivity of solid ice samples collected in the antarctic ice sheet was measured with a new technique called "AC-ECM (AC Electrical Conductivity Measurements)". The purpose was to detect variation of impurity content in ice cores with high spatial resolution and with high reproducibility for repetitive measurements. The conductance of the ice sample was measured with 2-terminal electrodes and with parallel-plate electrodes at 16 frequencies between 40 Hz and 1 MHz. Results of the conductance measured by these two different pairs of electrodes were compared to determine the physical meaning of the signals measured with the new technique. The authors could measure conductance, which is proportional to the conductivity of ice, at frequencies above 100 kHz at -20°C. The relaxation frequencies of Debye dispersion were higher when values of conductance were measured with the new technique, which suggested that surface conduction was dominant. (Auth. mod.)

50-2576

Determination of the trace elements in a Mizuho ice core sample by a combination of conventional and high resolution inductively coupled plasma mass spectrometry.

Shimamura, T., Iwashita, M., Takaku, Y., Akabane, I., Tsumura, A., Yamasaki, S., NIPR Symposium on Polar Meteorology and Glaciology, Proceedings. No.9, Tokyo, National Institute of Polar Research, 1995, p.33-44, 11 refs.

Ice cores, Impurities, Ice composition, Experimentation, Antarctica—Mizuho Station

Seventeen elements (Li, Na, Mg, Al, Ca, V, Cr, Mn, Fe, Ni, Co, Cu, Zn, Sr, Ba, Pb and Bi) in an ice core collected at Mizuho Station were determined by a combination of conventional and high resolution inductively coupled plasma mass spectrometry (ICP-MS). The ice sample was separated into 5 fractions from surface to inner core by stepwise melting. All the registered elements decreased from the core surface to the inner core by one to four orders of magnitude. The surface contaminations of Li, Cr, Ni, Co, Cu, Ba, Pb and Bi penetrated into the second fraction, while only the surface fraction was contaminated for Na, Mg, Al, V, Mn, Fe, Ca, and Sr. Zn kept decreasing to the innermost fraction. Na, Mg and Ca may have originated from sea water, while V, Cr, Mn, Fe, Cu, Zn and Sr may be supplied from the crust. Significant portions of Co and Ni could be of extraterrestrial origin. (Auth.)

50-2577

Relation between surface ice flow and anisotropic internal radio-echoes in the east Queen Maud Land ice sheet, Antarctica.

Maeno, H., Fujita, S., Kamiyama, K., Motoyama, H., Furukawa, T., Uratsuka, S., NIPR Symposium on Polar Meteorology and Glaciology, Proceedings. No.9, Tokyo, National Institute of Polar Research, 1995, p.76-86, 21 refs.

Attenuation, Ice sheets, Radio echo soundings, Electromagnetic properties, Polarization (waves), Ice surface, Flow rate, Antarctica—Queen Maud Land

The polarimetric characteristics of radar-echoes reflected in the antarctic ice sheet (internal radar-echoes) were investigated to clarify the relationship between the preferred orientation of ice crystals and the polarization of electromagnetic waves. The radar sounding was carried out with a 179 MHz sounder at 14 different sites along the oversnow traverse route from Showa Station to Dome Fuji. The internal radar-echoes reflected were found to be strongly polarized. In addition, a good correlation was found between the measured surface flow vectors and the orientation dependence of the attenuation, i.e. the antennae orientations that give the maximum attenuation are always parallel to the flow line. The differences between the maximum and minimum values of the attenuation coefficient at each site are proportional to the flow velocity. These results suggest that polarimetric radar-echo sounding is applicable to measure approximate flow vector; to investigate deeper layers by orienting the antennae perpendicular to the flow line; and to investigate the dynamics around the summit of the ice sheet. (Auth. mod.)

50-2578

Numerical simulation of Shirase Glacier, east Queen Maud Land, Antarctica.

Pattyn, F., Decleir, H., NIPR Symposium on Polar Meteorology and Glaciology, Proceedings. No.9, Tokyo, National Institute of Polar Research, 1995, p.87-109, Refs. p.107-109.

Glacier flow, Ice models, Mathematical models, Glacier mass balance, Glacier heat balance, Glacier thickness, Drainage, Antarctica—Shirase Glacier

Recent observations in the Shirase Drainage Basin show that the ice sheet is thinning at a considerable rate and that this thinning started about a few thousand years ago. In order to improve insight into the present transient behavior of the ice sheet in the Shirase Drainage Basin, a two-dimensional time-dependent flow line model was developed. By simulating the evolution of the ice sheet during a complete glacial-interglacial cycle it was possible to obtain better insight into the reaction of the ice sheet to environmental changes (temperature, sea-level and mass balance) and to calculate the present local imbalance. Investigation of the role of geothermal heating at the ice sheet base showed that changes in geothermal heat flux and the inclusion of bedrock heating did not significantly alter the overall ice sheet geometry. The dynamical experiments revealed that the present modeled imbalance is much lower than the observed rate of change. (Auth. mod.)

50-2579

Method of measuring snow particle size from video images for meteorological radar observations.

Hatanaka, M., Ohta, Y., Nishitsuji, A., Sakaguchi, T., Wada, M., NIPR Symposium on Polar Meteorology and Glaciology, Proceedings. No.9, Tokyo, National Institute of Polar Research, 1995, p.110-117, 13 refs.

Radar, Snow, Particle size distribution, Meteorological data, Image processing, Recording instruments, Antarctica—Showa Station, Antarctica—Asuka Station, Antarctica—Mizuho Station

For meteorological radar observations, it is very important to know the size and the characteristics of precipitation particles. In this paper, the authors report a method to measure snow particle size using snow particle video images. An image of snow particles, which was recorded by a specially designed portable video camera set on the ground, was digitized by a personal computer. To reduce background offset, the authors used subtraction processing between images at different recording times. Using projection data on this image, the position of each snow particle was detected. Finally, they measured the three kinds of snow particle "radius", applying this method to two sets of VCR tapes that had been recorded at Showa Station, on Apr. 5-6 and on Oct. 1, 1988, and obtained relative distributions. (Auth.)

50-2580

Comparative study of the surface radiation budget at Ny-Ålesund, Svalbard and Syowa Station, Antarctica, 1987.

Yamanouchi, T., Ørbæk, J.B., NIPR Symposium on Polar Meteorology and Glaciology, Proceedings. No.9, Tokyo, National Institute of Polar Research, 1995, p.118-132, 14 refs.

Sea ice, Radiation balance, Albedo, Seasonal variations, Antarctica—Showa Station, Norway—Svalbard

The surface radiation budget in 1987 at Ny-Ålesund, Svalbard was measured by the Norwegian Polar Institute, and is discussed as a typical radiative regime for the Arctic, at the edge of the seasonal sea ice area. Compared to the observations on the sea ice at Showa Station, the net total radiation at Ny-Ålesund is much larger in the summer months than at Showa. These are the results of lower albedo in summer months and larger incident radiation due to warmer temperatures and clouds. As a whole, the radiation budget at Ny-Ålesund in summer is controlled by the maritime airmass, while in winter it is strongly affected by both maritime air from the south and arctic air from the north. (Auth. mod.)

50-2581

Seasonal change of the atmospheric heat budget over the southern ocean from ECMWF and ERBE data in 1988.

Okada, I., Yamanouchi, T., NIPR Symposium on Polar Meteorology and Glaciology, Proceedings. No.9, Tokyo, National Institute of Polar Research, 1995, p.146-159, 22 refs.

Air temperature, Heat flux, Air ice water interaction, Meteorological data, Sea ice, Seasonal variations, Radiation

Seasonal change of the atmospheric heat energy budget in the antarctic sea ice in the 60-70°S latitudinal belt in 1988 was obtained from ERBE radiation data and ECMWF global atmospheric data. The surface heat energy flux is maximum in May and minimum in Dec. or Jan., with amplitude of about 200-230 W/m^2. Positive values occur during 8 months of the year, from Mar. to Oct. The surface heat flux decreases 33-68 W/m^2 from May to July, when solar incidence is near zero. The sea-ice concentration increases from 33% to 60%; this increase appears to affect the surface heat flux. In this area, there are few observational data that can be directly compared with the present result. However, by combining observational data and assumptions for radiation and surface condition, the authors' estimate for the surface heat flux is within the range of observations in autumn. (Auth. mod.)

50-2582

Taxonomy and ecology of the ciliate fauna (Protozoa, Ciliophora) in the endopagial and pelagial of the Weddell Sea, Antarctica.

Petz, W., Song, W., Wilbert, N., *Stapfia*, Aug. 23, 1995, No.40, 223p., Refs. p.200-218.

Sea ice, Marine biology, Ecology, Plankton, Antarctica—Weddell Sea

The ciliate colonization and community of antarctic sea ice were studied in the austral autumn using a direct live counting method. Grease and very young pancake ice contained no, or very few, ciliates (up to 200 active ind/l of melted ice); distinctly more (5,347 active ind/l on average) were found in up to 50 day old pancake ice; still higher abundances occurred in multiyear sea ice (max. 57,000 ind/l melted ice, 370 μg carbon/l). Population densities decreased towards the top of the ice. Very low numbers (333 active ind/l) were found in the pelagial. The plankton community differed markedly from that of sea ice: *Gymnozoum* spp. and *Strombidium* spp. dominate in the ice, tintinnids, mainly *Codonellopsis glacialis* and *Cymatocylis convallaria*, in the plankton. Species found within sea ice were usually not recorded in the pelagial and vice versa. Forty-six ciliate species, predominantly from sea ice, and 6 from the pelagial were investigated morphologically and ecologically. Descriptions are based on live observations, protargol and silver nitrate impregnations, morphometrical analyses and scanning electron microscopy. Seventeen new species are established. (Auth. mod.)

50-2583

Winter investigations in the Ross, Amundsen and Bellingshausen seas, 1993-1995. [Investigación invernal en los mares de Ross, Amundsen y Bellingshausen: temporadas 1993-1994-1995]

Jaña Obregón, R., Jeffries, M.O., *Boletín Antártico Chileno*, Nov. 1995, 14(2), p.6-8, In Spanish with English summary. 10 refs.

Sea ice, Snow cover, Air ice water interaction, Marine biology, International cooperation, Antarctica—Ross Sea, Antarctica—Amundsen Sea, Antarctica—Bellingshausen Sea

Since 1993, at the invitation of the U.S. National Science Foundation, Office of Polar Programs, and the University of Alaska, INACH scientists have participated in cruises aboard the R/V *Nathaniel B. Palmer*. The three cruises encompassed the Ross, Amundsen and Bellingshausen seas. In Sep. and Oct. 1994 and Aug. and Sep. 1995, the UAF sea ice research program was carried out including observations and measurements of snow cover properties and characteristics, ice crystal structure and growth processes, ice salinity and temperature and the snow and ice thickness distribution. Other research activities during the same cruises included sea ice biology, light transmission through sea ice, physical and chemical oceanography, atmospheric science, and further documentation of the occurrence of marine mammals and sea birds. (Auth. mod.)

50-2584

Morphology and morphogenesis of *Strombidium kryalis* nov. spec. (Ciliophora, Strombidiida) from antarctic sea ice.

Petz, W., *Archiv für Protistenkunde*, 1994, Vol.144, p.185-195, Refs. p.194-195.

Sea ice, Marine biology, Antarctica—Weddell Sea

The morphology and morphogenesis of *Strombidium kryalis* sp. n. were investigated using protargol silver impregnation. *S. kryalis* occurs in the brine-filled pore system of antarctic sea ice. The comparatively small adoral zone of membranelles forms an almost closed spiral around the apical area. The ventral adoral membranelles invaginate on this anterior surface. *S. kryalis* possesses a single contractile vacuole. The cytoplasm includes numerous sequestered chloroplasts, some retained from cryptophytes and most from other microalgae. Morphogenesis is enantiotropic, i.e. proter and opisthe are connected by their posterior portions and are 180° inverted during some divisional stages. The oral primordium originates apokinetally near the cell surface. Subsequently, it moves deeper into the cell and differentiates in a temporary sac. The somatic ciliature forms by 2 rounds of intrakinetal basal body proliferation; the kinetics simply divide. These morphogenetic events confirm a proposed sister-group relationship between Strombidiida (strombidiids) and Oligotrichida (tintinnids and strobilidiids). (Auth.)

50-2585

Wind slabs: new data. [Plaques à vent: nouvelles données]

Duclos, A., *Neige et avalanches*, Dec. 1995, No.72, p.2-7,32, In French with English summary. 6 refs.

Snowdrifts, Snow accumulation, Snow erosion, Snow cover stability, Avalanche formation, Wind factors

50-2586

Avalanche Balloon System (ABS): for or against? [Le ballon avalanche ABS: pour ou contre]

Sivardière, F., Zuanon, J.P., *Neige et avalanches*, Dec. 1995, No.72, p.8-11,32, In French with English summary.

Avalanches, Rescue equipment, Safety, Cold weather survival, Inflatable structures, Portable equipment

50-2587

Balance sheet of the avalanche accident during the 1994-95 year in France (from 01/10/94 to 30/09/95). [Bilan des avalanches]

Sivardière, F., *Neige et avalanches*, Dec. 1995, No.72, p.12-14,32, In French with English summary.

Avalanches, Accidents, France

50-2588

Aspects of the 1994-95 winter. [Aspects de l'hiver 1994-95]

Météo-France, *Neige et avalanches*, Dec. 1995, No.72, p.15-20,32, In French with English summary.

Snowfall, Snowstorms, Snow cover distribution, France

50-2589

Meteorological and snow cover information disseminated by Météo-France. [L'information nivométéorologique diffusée par Météo-France]

Pahaut, E., *Neige et avalanches*, Dec. 1995, No.72, p.20-21,32, In French with English summary.

Avalanche forecasting, Weather forecasting, Snowfall, France

50-2590

OASIS: observation of avalanche site and statistical interrogation. [OASIS: Observation des Avalanches du Site et Interrogation Statistique]

Gillet, M., *Neige et avalanches*, Dec. 1995, No.72, p.25-26,32, In French with English summary.

Avalanches, Avalanche forecasting, Accidents, Data processing, Computer programs, France

50-2591

Avalanche rescue dogs. [Les chiens d'avalanches]

Gouzon, J.P., *Neige et avalanches*, Sep. 1995, No.71, p.8-12, In French.

Avalanches, Accidents, Rescue operations, Animals

50-2592

Characteristics of the snow cover of the eastern Pyrenees. [Particularités de l'enneigement des Pyrénées Orientales]

Péjouan, H., *Neige et avalanches*, Sep. 1995, No.71, p.13-15, In French. 5 refs.

Snow surveys, Snow cover distribution, Snowfall, Snowstorms, France—Pyrenees

50-2593

Avalanche warning flags: what do you think? [Le drapeau avalanche: qu'en pensez-vous]

Sivardière, F., *Neige et avalanches*, Sep. 1995, No.71, p.22-23, In French.

Avalanches, Accidents, Safety, Warning systems

50-2594

Artificial intelligence and avalanches. [L'intelligenza artificiale e le valanghe]

Caliari, R., *Neve e valanghe*, Mar. 1995, No.24, p.8-9,79-80, In Italian with English summary.

Avalanche forecasting, Avalanches, Accidents, Computer applications, Italy

50-2595

Testing of models in the Province of Trento. [Le sperimentazioni dei modelli in Provincia di Trento]

Gaddo, M., *Neve e valanghe*, Mar. 1995, No.24, p.10-17,79-80, In Italian with English summary.

Avalanches, Avalanche modeling, Avalanche forecasting, Computer programs, Italy

50-2596

NXLOG model—local avalanche forecasting in Switzerland: strategy and means. [NXLOG, la previsione locale delle valanghe in Svizzera: strategia e strumenti]

Bolognesi, R., Buser, O., Good, W., *Neve e valanghe*, Mar. 1995, No.24, p.18-21,79-80, In Italian with English summary. 9 refs.

Avalanche forecasting, Avalanche modeling, Computer programs, Switzerland

50-2597

NXLOG avalanche model as applied at the Presena glacier ski lift. [Il modello NXLOG applicato alla stazione sciistica del ghiacciaio Presena]

Cestari, P., *Neve e valanghe*, Mar. 1995, No.24, p.22-31,79-80, In Italian with English summary.

Avalanche modeling, Avalanche forecasting, Computer programs, Italy

50-2598

ASTRAL: the French program for research on avalanche forecasting by analogous days. [ASTRAL: Il programma francese per la ricerca delle giornate analoghe]

Guyomarc'h, G., Merindol, L., *Neve e valanghe*, Mar. 1995, No.24, p.32-37,79-80, In Italian with English summary.

Avalanche forecasting, Avalanche modeling, Computer programs, France

50-2599
CISA-IKAR 1994: results of work carried out by the Avalanche Commission in Autrans, France. [CISA-IKAR 1994: I risultati dei lavori della Commissione Valanghe ad Autrans, in Francia]
International Commission for Alpine Rescue (French version: Commission Internationale pour le Sauvetage Alpin) (German version: Internationale Kommission für Alpinen Rettungswesen), Birchwil, Switzerland, *Neve e valanghe,* Mar. 1995, No.24, p.38-43,80, In Italian with English summary.
Avalanches, Avalanche forecasting, Accidents, Safety, Rescue operations, Meetings

50-2600
Control of avalanche risk. [Il controllo del rischio da valanga]
Campana, M., Boerio, V., Bonini, G., *Neve e valanghe,* Mar. 1995, No.24, p.44-57,80, In Italian with English summary. 17 refs.
Avalanche forecasting, Weather forecasting, Snow cover stability, Safety, Italy

50-2601
Thickness of Valfurva glaciers measured by vertical electrical probing. [Lo spessore dei ghiacciai della Valfurva: misurazioni tramite sondaggi elettrici verticali]
Guglielmin, M., Nardo, A., Smiraglia, C., *Neve e valanghe,* Mar. 1995, No.24, p.58-67,80, In Italian with English summary. 15 refs.
Mountain glaciers, Glacier surveys, Glacier thickness, Radio echo soundings, Italy

50-2602
Correlation of snow trafficability with the physical properties and conditions of deposited snow. Final report. Part I.
Yong, R.N., Boonsinsuk, P., Mohamed, A.M.O., Caporuscio, F., Alammawi, S., Wang, B., Montreal, McGill University, Geotechnical Research Centre, Feb. 1989, 121p., 11 refs. Submitted to the Defence Research Establishment Suffield, Ralston, Alberta.
Snow strength, Snow hardness, Snow density, Snow stratigraphy, Trafficability

50-2603
Spatial and temporal distribution of storm precipitation in southwestern British Columbia.
Loukas, A., Quick, M.C., *Journal of hydrology,* Jan. 1, 1996, 174(1-2), p.37-56, 28 refs.
Precipitation (meteorology), Climatology, Watersheds, Storms, Classifications, Distribution, Periodic variations, Snowstorms, Snowfall, Flood forecasting, Topographic effects, Canada—British Columbia

50-2604
Controls on the major ion chemistry of the Ürümqi River, Tian Shan, People's Republic of China.
Williams, M.W., Yang, D.Q., Liu, F.J., Turk, J., Melack, J.M., *Journal of hydrology,* Nov. 1995, 172(1-4), p.209-229, 40 refs.
River flow, River basins, Hydrogeochemistry, Weathering, Ion density (concentration), Aerosols, Snow hydrology, Snowmelt, Snow composition, Chemical properties, Sampling, Environmental tests, China—Urumqi River

50-2605
Modeling measurement errors when estimating snow water equivalent.
Carroll, S.S., *Journal of hydrology,* Nov. 1995, 172(1-4), p.247-260, 11 refs.
Snow hydrology, Snow water equivalent, Runoff forecasting, Water supply, Stream flow, Mathematical models, Simulation, Statistical analysis, Accuracy

50-2606
Phase equilibria in extended simple point charge ice-water systems.
Báez, L.A., Clancy, P., *Journal of chemical physics,* Dec. 8, 1995, 103(22), p.9744-9755, 25 refs.
Ice physics, Ice crystal growth, Ice crystal structure, Ice crystal size, Stability, Ice water interface, Phase transformations, Molecular structure, Molecular energy levels, Melting points, Thermodynamics, Computerized simulation

50-2607
Ice tower—maximum capacity in the smallest area. [Der Eisturm - maximale Kapazität auf kleinster Fläche]
Ganter, E., *Ki Luft- und Kältetechnik,* Apr. 1995, 31(4), p.178-181, In German with English summary. 2 refs.
Ice refrigeration, Storage tanks

50-2608
Japanese antarctic activities for 1995-1996.
Tokyo. National Institute of Polar Research, Tokyo, National Institute of Polar Research, [1996], 22p., Exchange of information under Article 7(5) of the Antarctic Treaty.
Research projects, Low temperature research, Instruments, Oceanography, Glaciology, Meteorology, Geology, Atmospheric physics, Antarctica—Showa Station

The following data regarding Japanese antarctic activities for 1995-1996 are presented: details of ships, aircraft and other vehicles; the 37th Japanese Antarctic Research Expedition (JARE) itinerary on board the *Shirase;* details of stations; personnel; work program; scientific equipment; transportation facilities and communication equipment; facilities for rendering assistance; description of unoccupied refuges; notice of oceanographic research ships *Hakurei-Maru* and *Umitaka-Maru* in the Antarctic Treaty area; list of members of JARE-37; information on telecommunication equipment and schedules at Showa Station and Dome F for 1996, and on the *Shirase* from Nov. 1995 to Apr. 1996.

50-2609
Middle Miocene deepwater paleoceanography in the southwest Pacific: relations with East Antarctic Ice Sheet development.
Flower, B.P., Kennett, J.P., *Paleoceanography,* Dec. 1995, 10(6), p.1095-1112, Refs. p.1111-1112.
Bottom sediment, Ocean bottom, Oceanography, Paleoclimatology, Ice sheets, Ice formation, Glaciation, Geochronology, Antarctica—East Antarctica

A suite of middle Miocene Deep Sea Drilling Project sites in the southwest Pacific reveals large-scale changes in deepwater circulation associated with East Antarctic Ice Sheet (EAIS) variations from ca. 16.5 to 13.8 Ma. Oxygen and carbon isotopic records based on *Cibicidoides* benthic foraminifera from a depth transect and from a meridional transect allow detailed examination of southwest Pacific deepwater circulation from ca. 17.5 to 12 Ma. Data are consistent with the hypothesis that major EAIS growth was fostered by diminished meridional heat transport to the high southern latitudes related to the termination of Tethyan Indian Saline Water and an increase in Southern Component Water production during the early middle Miocene after 15.6 Ma. Further, a maximum vertical carbon isotopic gradient of 0.8 per mill at 13.6 Ma suggests that Southern Component Intermediate Water production and Pacific Deep Water strength were each at a maximum at this time and were critical to major EAIS growth. The establishment of near-modern $\delta^{13}C$ and $\delta^{18}O$ gradients following major EAIS growth from ca. 14.0 to 13.8 Ma marks a major step in the development of the Neogene ocean/cryosphere system. (Auth. mod.)

50-2610
On the definition of stratigraphical division boundaries in the Quaternary for the Scandinavian glaciated areas.
Mojski, J.E., *Polish Academy of Sciences. Bulletin. Earth sciences,* June 1995, 43(1), p.1-4, 8 refs.
Glaciation, Quaternary deposits, Stratigraphy, Pollen, Paleoclimatology, Periglacial processes, Scandinavia

50-2611
Correlation of glacial episodes of the Wisła (Vistulian) glaciation in the Polish lowland and mountain regions, and in Scandinavia.
Lindner, L., Marks, L., *Polish Academy of Sciences. Bulletin. Earth sciences,* June 1995, 43(1), p.5-15, 70 refs.
Glaciation, Stratigraphy, Paleoclimatology, Ice cover, Ice conditions, Mountain glaciers, Poland, Scandinavia

50-2612
Four Scandinavian glaciations in the Vistula Gap of the South Polish Uplands.
Pożaryski, W., Maruszczak, H., Lindner, L., *Polish Academy of Sciences. Bulletin. Earth sciences,* June 1995, 43(1), p.17-27, 21 refs.
Glaciation, Paleoclimatology, Stratigraphy, Pleistocene, Quaternary deposits, Oxygen isotopes, Poland

50-2613
***Taxus* in plant communities of the Mazovian Interglacial Age in Central Europe and its climatostratigraphical consequences.**
Krupiński, K.M., *Polish Academy of Sciences. Bulletin. Earth sciences,* June 1995, 43(1), p.29-41, 103 refs.
Stratigraphy, Paleoclimatology, Pleistocene, Plants (botany), Paleobotany, Pollen

50-2614
Regional stratigraphy and lithology of the Carpathian loess deposits in Przemyśl environs.
Łanczont, M., *Polish Academy of Sciences. Bulletin. Earth sciences,* June 1995, 43(1), p.43-56, 40 refs.
Stratigraphy, Lithology, Loess, Radioactive age determination, Terraces, Glaciation, Poland

50-2615
Profiles at Brus and Ruda (Lublin Polesie), and their significance for stratigraphy of the Mesopleistocene in Poland.
Wojtanowicz, J., *Polish Academy of Sciences. Bulletin. Earth sciences,* June 1995, 43(1), p.57-64, 9 refs.
Pleistocene, Stratigraphy, Pollen, Palynology, Lithology, Glaciation, Poland

50-2616
Stratigraphy of valley sediments of the Por and the Łabuńka River drainage basins (Lublin Upland and Roztocze).
Superson, J., *Polish Academy of Sciences. Bulletin. Earth sciences,* June 1995, 43(1), p.65-72, 8 refs.
Stratigraphy, Valleys, Sediments, River basins, Loess, Geology, Paleoclimatology, Poland

50-2617
Stratigraphical position of kame deposits to the north of Bielsk Podlaski, based on ^{14}C and TL datings, and on palynological analysis.
Mycielska-Dowgiałło, E., Krupiński, K.M., Pękalska, A., Woronko, B., *Polish Academy of Sciences. Bulletin. Earth sciences,* June 1995, 43(1), p.73-78, 16 refs.
Paleoclimatology, Radioactive age determination, Palynology, Glaciation, Glacial deposits, Topographic features, Stratigraphy, Poland

50-2618
Concrete under severe conditions: environment and loading.
Sakai, K., ed, Banthia, N., ed, Gjørv, O.E., ed, London, E & FN Spon, 1995, 1773p. (2 vols.), Refs. passim. Proceedings of the International Conference on Concrete under Severe Conditions (CONSEC), Sapporo, Japan, Aug. 2-4, 1995. For selected papers see 50-2619 through 50-2691.
Concrete durability, Concrete strength, Concrete freezing, Winter concreting, Concrete admixtures, Reinforced concretes, Frost resistance, Frost action, Frost protection, Freeze thaw tests

50-2619
Assessing freezing and thawing resistance of concrete using the modified AASHTO T161 (ASTM C666) procedure.
El-Korchi, T., Simon, M., Forster, S., Concrete under severe conditions: environment and loading. Vol.1. Edited by K. Sakai, N. Banthia, and O.E. Gjørv, London, E & FN Spon, 1995, p.65-72, 9 refs.
Concrete freezing, Concrete durability, Frost resistance, Freeze thaw tests, Air entrainment, Porosity

50-2620
Freeze-thaw and deicing salt resistance of concrete—basic research and testing.
Setzer, M.J., Concrete under severe conditions: environment and loading. Vol.1. Edited by K. Sakai, N. Banthia, and O.E. Gjørv, London, E & FN Spon, 1995, p.73-84, 35 refs.
Concrete freezing, Concrete durability, Frost action, Frost resistance, Freeze thaw tests, Salting, Corrosion

50-2621

Scaling process on specimen surfaces in freezing and thawing test.

Kaufmann, J., Studer, W., Concrete under severe conditions: environment and loading. Vol.1. Edited by K.Sakai, N. Banthia, and O.E. Gjørv, London, E & FN Spon, 1995, p.85-94, 7 refs.

Concrete freezing, Concrete durability, Frost resistance, Freeze thaw tests

50-2622

Evaluation of the precision of freeze thaw and deicing salt testing by the CDF procedure.

Setzer, M.J., Auberg, R., Concrete under severe conditions: environment and loading. Vol.1. Edited by K.Sakai, N. Banthia, and O.E. Gjørv, London, E & FN Spon, 1995, p.95-106, 15 refs.

Concrete freezing, Concrete durability, Frost resistance, Frost action, Freeze thaw tests, Salting, Corrosion

50-2623

Testing methods and frost resistance standardization of concrete.

Ivanov, F.M., Concrete under severe conditions: environment and loading. Vol.1. Edited by K.Sakai, N. Banthia, and O.E. Gjørv, London, E & FN Spon, 1995, p.107-113, 15 refs.

Concrete freezing, Concrete durability, Frost resistance, Freeze thaw tests, Cold weather tests

50-2624

Rapid freeze/thaw testing of concrete—pore structure changes by cracking and healing.

Jacobsen, S., Sellevold, E.J., Concrete under severe conditions: environment and loading. Vol.1. Edited by K.Sakai, N. Banthia, and O.E. Gjørv, London, E & FN Spon, 1995, p.114-125, 23 refs.

Concrete freezing, Concrete durability, Frost resistance, Freeze thaw tests, Air entrainment, Porosity

50-2625

Freezing and thawing of lightweight concrete.

Hoff, G.C., Concrete under severe conditions: environment and loading. Vol.1. Edited by K.Sakai, N. Banthia, and O.E. Gjørv, London, E & FN Spon, 1995, p.129-138, 5 refs.

Lightweight concretes, Concrete aggregates, Concrete freezing, Concrete durability, Concrete strength, Offshore structures, Frost resistance, Freeze thaw tests, Compressive properties

50-2626

Freeze-thaw durability of concretes using lightweight aggregate of differing absorption characteristics.

Roberts, J.M., Concrete under severe conditions: environment and loading. Vol.1. Edited by K.Sakai, N. Banthia, and O.E. Gjørv, London, E & FN Spon, 1995, p.139-146, 13 refs.

Lightweight concretes, Concrete aggregates, Concrete freezing, Concrete durability, Concrete curing, Bridges, Frost resistance, Freeze thaw tests

50-2627

Frost effects on high strength concrete without air entrainment.

Kukkö, H., Concrete under severe conditions: environment and loading. Vol.1. Edited by K.Sakai, N. Banthia, and O.E. Gjørv, London, E & FN Spon, 1995, p.147-156, 3 refs.

Concrete freezing, Concrete admixtures, Concrete durability, Concrete strength, Air entrainment, Frost resistance, Frost action, Freeze thaw tests

50-2628

Performance of high-early strength concrete under freeze-thaw conditions.

Hossain, M., Sadeq, M.A., Wojakowski, J., Concrete under severe conditions: environment and loading. Vol.1. Edited by K.Sakai, N. Banthia, and O.E. Gjørv, London, E & FN Spon, 1995, p.157-166, 4 refs.

Concrete pavements, Concrete freezing, Concrete durability, Concrete strength, Concrete placing, Frost resistance, Freeze thaw tests, Road maintenance

50-2629

Frost durability of high flowing concrete using fine mineral powders.

Khanzadi, M., Kwon, Y.J., Senbu, O., Kamada, E., Concrete under severe conditions: environment and loading. Vol.1. Edited by K.Sakai, N. Banthia, and O.E. Gjørv, London, E & FN Spon, 1995, p.167-176, 3 refs.

Concrete admixtures, Concrete freezing, Concrete durability, Concrete strength, Concrete curing, Air entrainment, Frost resistance, Freeze thaw tests

50-2630

Durability of cementitious mortars containing silica fume.

Quaresima, R., Scoccia, G., Volpe, R., Concrete under severe conditions: environment and loading. Vol.1. Edited by K.Sakai, N. Banthia, and O.E. Gjørv, London, E & FN Spon, 1995, p.177-183, 10 refs.

Mortars, Concrete admixtures, Concrete freezing, Concrete durability, Frost resistance, Freeze thaw tests

50-2631

Quantifying freezable water in portland cement paste using quasielastic neutron scattering.

Gress, D.L., El-Korchi, T., Livingston, R.A., Neumann, D.A., Rush, J.J., Concrete under severe conditions: environment and loading. Vol.1. Edited by K.Sakai, N. Banthia, and O.E. Gjørv, London, E & FN Spon, 1995, p.187-194, 10 refs.

Cements, Concrete admixtures, Concrete freezing, Concrete durability, Water cement ratio, Porosity, Frost resistance, Hygroscopic water, Water structure, Molecular energy levels, Neutron scattering

50-2632

Experimental study of affecting factors on frost resistance and freezable water in high strength concrete.

Nili, M., Katsura, O., Kamada, E., Concrete under severe conditions: environment and loading. Vol.1. Edited by K.Sakai, N. Banthia, and O.E. Gjørv, London, E & FN Spon, 1995, p.195-202, 5 refs.

Concrete aggregates, Concrete freezing, Concrete strength, Concrete durability, Concrete curing, Water cement ratio, Air entrainment, Frost resistance

50-2633

Ice propagation in concrete.

Wang, K., Monteiro, P.J.M., Concrete under severe conditions: environment and loading. Vol.1. Edited by K.Sakai, N. Banthia, and O.E. Gjørv, London, E & FN Spon, 1995, p.203-210, 6 refs.

Concrete freezing, Concrete durability, Ice formation, Freezing front, Freezing rate, Frost action, Frost resistance, Liquid solid interfaces

50-2634

Freezing point depression of water in concrete aggregates.

Salcedo, M.A., Scholer, C.F., Dolch, W.L., Concrete under severe conditions: environment and loading. Vol.1. Edited by K.Sakai, N. Banthia, and O.E. Gjørv, London, E & FN Spon, 1995, p.211-220, 11 refs.

Concrete aggregates, Concrete freezing, Concrete durability, Ice formation, Freezing front, Freezing rate, Freezing points, Frost action, Frost resistance, Porosity

50-2635

Moisture uptake and service life of concrete exposed to frost.

Fagerlund, G., Concrete under severe conditions: environment and loading. Vol.1. Edited by K.Sakai, N. Banthia, and O.E. Gjørv, London, E & FN Spon, 1995, p.221-232, 12 refs.

Concrete freezing, Concrete durability, Frost resistance, Frost action, Ice formation, Freezing front, Air entrainment, Porosity

50-2636

Effect of pumping on entrained air voids: role of pressure.

Janssen, D.J., Dyer, R.M., Elkey, W.E., Concrete under severe conditions: environment and loading. Vol.1. Edited by K.Sakai, N. Banthia, and O.E. Gjørv, London, E & FN Spon, 1995, p.233-242, 13 refs.

Concrete freezing, Concrete placing, Frost action, Frost resistance, Frost protection, Air entrainment

50-2637

Influence of the type of cement on the freeze-thaw/freeze-deicing salt resistance of concrete.

Stark, J., Ludwig, H.M., Concrete under severe conditions: environment and loading. Vol.1. Edited by K.Sakai, N. Banthia, and O.E. Gjørv, London, E & FN Spon, 1995, p.245-254, 15 refs.

Cements, Concrete admixtures, Concrete freezing, Concrete durability, Frost action, Frost resistance, Freeze thaw tests, Salting, Corrosion

50-2638

Freezing and thawing resistance of concrete pavers saturated in de-icing chemicals.

Ghafoori, N., Mathis, R.P., Concrete under severe conditions: environment and loading. Vol.1. Edited by K.Sakai, N. Banthia, and O.E. Gjørv, London, E & FN Spon, 1995, p.255-264, 11 refs.

Concrete pavements, Precast concretes, Cements, Concrete admixtures, Concrete freezing, Concrete durability, Concrete strength, Frost action, Frost resistance, Freeze thaw tests, Chemical ice prevention, Road maintenance

50-2639

Effect of de-icing salts on frost damage of high-strength concrete.

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Concrete freezing, Concrete durability, Concrete strength, Concrete curing, Water cement ratio, Frost resistance, Frost action, Freeze thaw tests, Air entrainment, Salting

50-2640

Frost durability of high-performance concrete.

Marchand, J., Gagné, R., Pigeon, M., Jacobsen, S., Sellevold, E.J., Concrete under severe conditions: environment and loading. Vol.1. Edited by K.Sakai, N. Banthia, and O.E. Gjørv, London, E & FN Spon, 1995, p.273-288, 59 refs.

Concrete freezing, Concrete strength, Concrete durability, Frost action, Frost resistance, Ice formation, Freeze thaw tests, Air entrainment, Water cement ratio, Salting, Corrosion

50-2641

Chemical and mineral admixture effects on scaling and chloride permeability.

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Concrete durability, Concrete admixtures, Frost resistance, Air entrainment, Water cement ratio, Salting, Corrosion

50-2642

Rapid hardening additive of chloride-free under low temperature environments.

Ashida, M., Matsunaga, Y., Terasaki, S., Sakai, K., Sakai, E., Kosuge, K., Concrete under severe conditions: environment and loading. Vol.1. Edited by K.Sakai, N. Banthia, and O.E. Gjørv, London, E & FN Spon, 1995, p.303-311, 2 refs.

Concrete admixtures, Concrete hardening, Concrete durability, Concrete strength, Winter concreting, Frost resistance

50-2643

Basic properties of expansive admixture with antifreezing admixture in a grout.

Nakamura, H., Ono, Y., Sakai, K., Concrete under severe conditions: environment and loading. Vol.1. Edited by K.Sakai, N. Banthia, and O.E. Gjørv, London, E & FN Spon, 1995, p.312-320, 5 refs.

Concrete freezing, Concrete admixtures, Concrete strength, Winter concreting, Grouting, Antifreezes, Frost protection

50-2644

Strength development of setting accelerated concrete under low temperature environment.

Anazawa, M., Jitosono, H., Kuboyama, K., Sakai, K., Concrete under severe conditions: environment and loading. Vol.1. Edited by K.Sakai, N. Banthia, and O.E. Gjørv, London, E & FN Spon, 1995, p.321-328, 6 refs.

Concrete freezing, Concrete admixtures, Concrete hardening, Concrete strength, Frost resistance, Frost action, Frost protection

50-2645

Development of high-range antifreezing, water-reducing agent.

Saitoh, K., Midorikawa, M., Sakai, K., Concrete under severe conditions: environment and loading. Vol.1. Edited by K.Sakai, N. Banthia, and O.E. Gjørv, London, E & FN Spon, 1995, p.329-336, 3 refs.

Concrete freezing, Concrete admixtures, Concrete strength, Winter concreting, Antifreezes, Frost protection

50-2646

Low-heat high-strength concrete using admixtures in a low temperature environment.

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Winter concreting, Concrete admixtures, Concrete hardening, Concrete strength, Antifreezes

50-2647

Properties of low-heat high-strength concrete for low-temperature environment using acryl-based superplasticizer.

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Winter concreting, Concrete admixtures, Concrete hardening, Concrete strength, Water cement ratio

50-2648

Effects of superplasticizers on the properties of cement mortar in cold environments.

Sugiyama, M., Tamugi, N., Nishida, N., Sakai, K., Concrete under severe conditions: environment and loading. Vol.1. Edited by K.Sakai, N. Banthia, and O.E. Gjørv, London, E & FN Spon, 1995, p.353-361, 3 refs.

Winter concreting, Concrete admixtures, Concrete hardening, Concrete strength, Water cement ratio, Cement admixtures, Mortars

50-2649

High-strength concrete for low temperature environment by using silica fume.

Amaya, T., Imamura, J., Kato, K., Saitoh, K., Sakai, K., Concrete under severe conditions: environment and loading. Vol.1. Edited by K.Sakai, N. Banthia, and O.E. Gjørv, London, E & FN Spon, 1995, p.362-371, 3 refs.

Winter concreting, Concrete admixtures, Concrete hardening, Concrete strength, Frost protection, Antifreezes

50-2650

Properties of concrete with highly pulverized blast-furnace slag.

Wakasugi, S., Sakai, K., Concrete under severe conditions: environment and loading. Vol.1. Edited by K.Sakai, N. Banthia, and O.E. Gjørv, London, E & FN Spon, 1995, p.372-381, 4 refs.

Winter concreting, Concrete admixtures, Concrete curing, Concrete hardening, Concrete strength

50-2651

Properties of belite type low-heat cement at low temperatures.

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Winter concreting, Cement admixtures, Concrete admixtures, Concrete curing, Concrete hardening, Concrete strength

50-2652

Belite-based low-heat cement for low temperature environments.

Hirose, S., Okamoto, T., Sakai, K., Concrete under severe conditions: environment and loading. Vol.1. Edited by K.Sakai, N. Banthia, and O.E. Gjørv, London, E & FN Spon, 1995, p.392-401, 3 refs.

Winter concreting, Cement admixtures, Concrete admixtures, Concrete curing, Concrete hardening, Concrete strength

50-2653

Mechanism of the abrasion of concrete structures due to the movement of ice sheets.

Ito, Y., Hara, F., Saeki, H., Tachibana, H., Concrete under severe conditions: environment and loading. Vol.1. Edited by K.Sakai, N. Banthia, and O.E. Gjørv, London, E & FN Spon, 1995, p.465-474, 6 refs.

Concrete structures, Concrete strength, Ice solid interface, Ice loads, Ice pressure, Ice friction, Offshore structures, Piers, Abrasion

50-2654

Evaluation of test methods of abrasion by ice movements on the surface of reinforced concrete structures.

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Concrete structures, Reinforced concretes, Concrete strength, Ice solid interface, Ice loads, Ice friction, Offshore structures, Piers, Abrasion, Hardness tests

50-2655

Prediction of the degree of abrasion of bridge piers by fresh water ice and the protective measures.

Hara, F., Saeki, H., Sato, M., Takahashi, Y., Tachibana, H., Concrete under severe conditions: environment and loading. Vol.1. Edited by K.Sakai, N. Banthia, and O.E. Gjørv, London, E & FN Spon, 1995, p.485-494, 8 refs.

Concrete structures, Concrete strength, Bridges, Piers, River ice, Ice solid interface, Ice loads, Ice friction, Ice control, Abrasion

50-2656

Frost resistance of surface layer of concrete with permeable sheet.

Sugawara, T., Saeki, N., Shoya, M., Concrete under severe conditions: environment and loading. Vol.1. Edited by K.Sakai, N. Banthia, and O.E. Gjørv, London, E & FN Spon, 1995, p.504-513, 2 refs.

Concrete freezing, Concrete durability, Concrete strength, Water cement ratio, Protective coatings, Thermal insulation, Frost resistance, Frost protection, Freeze thaw tests

50-2657

Wear resistance of concrete under low temperature.

Horiguchi, T., Concrete under severe conditions: environment and loading. Vol.1. Edited by K.Sakai, N. Banthia, and O.E. Gjørv, London, E & FN Spon, 1995, p.514-520, 6 refs.

Concrete durability, Concrete strength, Frost resistance, Abrasion, Hardness tests

50-2658

Special light weight concrete—resistance to rebar corrosion and salt/frost scaling.

Havdahl, J., Hammer, T.A., Justnes, H., Smeplass, S., Concrete under severe conditions: environment and loading. Vol.1. Edited by K.Sakai, N. Banthia, and O.E. Gjørv, London, E & FN Spon, 1995, p.585-594, 16 refs.

Lightweight concretes, Concrete freezing, Concrete durability, Concrete strength, Frost resistance, Freeze thaw tests, Offshore structures, Floating structures, Corrosion

50-2659

Repair measures for deteriorated abutments and piers due to frost damage.

Tsutsumi, Y., Maruyama, K., Seki, H., Concrete under severe conditions: environment and loading. Vol.1. Edited by K.Sakai, N. Banthia, and O.E. Gjørv, London, E & FN Spon, 1995, p.741-750, 6 refs.

Concrete freezing, Concrete durability, Concrete strength, Frost action, Frost protection, Waterproofing, Bridges, Piers

50-2660

Chloride problems in UK highway structures.

Mawhinney, M., Concrete under severe conditions: environment and loading. Vol.1. Edited by K.Sakai, N. Banthia, and O.E. Gjørv, London, E & FN Spon, 1995, p.779-785, 11 refs.

Reinforced concretes, Concrete durability, Salting, Corrosion, Road maintenance, Cost analysis, United Kingdom—England

50-2661

Cathodic protection in North America: field results in high and low temperature environments.

Bennett, J.E., Martin, B.L., Arase, K., Kawamata, K., Concrete under severe conditions: environment and loading. Vol.1. Edited by K.Sakai, N. Banthia, and O.E. Gjørv, London, E & FN Spon, 1995, p.786-795, 17 refs.

Reinforced concretes, Concrete durability, Corrosion, Salting, Bridges, Weatherproofing, Road maintenance

50-2662

Frost damage of concrete structures in Hokkaido.

Yamashita, H., Kita, T., Sakai, K., Takahashi, J., Concrete under severe conditions: environment and loading. Vol.1. Edited by K.Sakai, N. Banthia, and O.E. Gjørv, London, E & FN Spon, 1995, p.799-808, 3 refs.

Concrete freezing, Concrete durability, Frost resistance, Frost action, Bridges, Piers, Japan—Hokkaido

50-2663

Frost resistance of marine concrete in a cold environment.

Ayuta, K., Sakurai, H., Saeki, N., Concrete under severe conditions: environment and loading. Vol.1. Edited by K.Sakai, N. Banthia, and O.E. Gjørv, London, E & FN Spon, 1995, p.809-817, 5 refs.

Concrete freezing, Concrete durability, Frost action, Frost resistance, Freeze thaw tests, Air entrainment, Corrosion, Marine atmospheres

50-2664

Microstructure durability of concretes exposed to arctic conditions.

Sarkar, S.L., Malhotra, V.M., Concrete under severe conditions: environment and loading. Vol.1. Edited by K.Sakai, N. Banthia, and O.E. Gjørv, London, E & FN Spon, 1995, p.828-838, 16 refs.

Concrete freezing, Concrete durability, Reinforced concretes, Concrete aggregates, Cements, Frost resistance, Frost action, Corrosion, Offshore structures

50-2665

Case study on the performance of canal structure concretes under severe climatic conditions in Turkey.

Tosun, H., Concrete under severe conditions: environment and loading. Vol.1. Edited by K.Sakai, N. Banthia, and O.E. Gjørv, London, E & FN Spon, 1995, p.850-859, 5 refs.

Concrete freezing, Concrete durability, Concrete aggregates, Air entrainment, Water cement ratio, Frost action, Frost resistance, Freeze thaw tests, Channels (waterways), Turkey

50-2666

Energetically modified cement (EMC) for high performance concrete in winter concreting.

Ronin, V., Jonasson, J.E., Concrete under severe conditions: environment and loading. Vol.2. Edited by K.Sakai, N. Banthia, and O.E. Gjørv, London, E & FN Spon, 1995, p.898-906, 7 refs.

Winter concreting, Cements, Concrete admixtures, Concrete curing, Concrete hardening, Concrete strength, Antifieezes

50-2667

Study on thermos curing of concrete under winter conditions in Bulgaria.

Valev, V., Staneva, P., Concrete under severe conditions: environment and loading. Vol.2. Edited by K.Sakai, N. Banthia, and O.E. Gjørv, London, E & FN Spon, 1995, p.907-916, 6 refs.

Winter concreting, Concrete curing, Concrete heating, Concrete strength, Mathematical models, Bulgaria

50-2668

Temperature influence on concrete structures and its hardening.

Krylov, B.A., Zvezdov, A.I., Concrete under severe conditions: environment and loading. Vol.2. Edited by K.Sakai, N. Banthia, and O.E. Gjørv, London, E & FN Spon, 1995, p.917-923, 4 refs.

Winter concreting, Concrete curing, Concrete hardening, Concrete heating, Concrete strength, Concrete admixtures, Antifreezes, Frost protection

50-2669

Effectiveness of coatings on concrete under freezing and thawing conditions.

Sato, T., Sakai, K., Kumagai, M., Concrete under severe conditions: environment and loading. Vol.2. Edited by K.Sakai, N. Banthia, and O.E. Gjørv, London, E & FN Spon, 1995, p.927-934, 2 refs.

Concrete freezing, Concrete durability, Mortars, Frost protection, Frost resistance, Freeze thaw tests, Protective coatings, Waterproofing

50-2670

Mix design of air-entrained, high-performance concrete.

Lessard, M., Baalbaki, M., Aïtcin, P.C., Concrete under severe conditions: environment and loading. Vol.2. Edited by K.Sakai, N. Banthia, and O.E. Gjørv, London, E & FN Spon, 1995, p.1025-1034, 21 refs.

Winter concreting, Concrete durability, Concrete strength, Concrete admixtures, Cements, Air entrainment, Frost resistance, Frost protection, Freeze thaw tests

50-2671

Concrete mixture proportioning techniques for remote Alaskan locations.

Nichols, M.R., Christensen, G.S., Concrete under severe conditions: environment and loading. Vol.2. Edited by K.Sakai, N. Banthia, and O.E. Gjørv, London, E & FN Spon, 1995, p.1035-1044, 7 refs.

Winter concreting, Concrete aggregates, Cements, Concrete admixtures, Economic development, United States—Alaska

50-2672

Evaluation of deteriorated concrete structures by quantitative impact test and spectroscopy of transverse elastic wave.

Ohtsu, M., Uesugi, S., Concrete under severe conditions: environment and loading. Vol.2. Edited by K.Sakai, N. Banthia, and O.E. Gjørv, London, E & FN Spon, 1995, p.1057-1066, 6 refs.

Concrete durability, Concrete strength, Frost action, Freeze thaw tests, Ultrasonic tests

50-2673

Assessment of frost damage of concrete and its repair technique.

Tsukinaga, Y., Shoya, M., Sugita, S., Domon, K., Concrete under severe conditions: environment and loading. Vol.2. Edited by K.Sakai, N. Banthia, and O.E. Gjørv, London, E & FN Spon, 1995, p.1067-1076, 4 refs.

Concrete freezing, Concrete durability, Concrete strength, Winter concreting, Concrete placing, Frost action, Frost protection, Freeze thaw tests

50-2674

Measurement of cracking in mortar due to freezing and thawing by image processing methods.

Narita, T., Mihashi, H., Hirai, K., Umeoka, T., Concrete under severe conditions: environment and loading. Vol.2. Edited by K.Sakai, N. Banthia, and O.E. Gjørv, London, E & FN Spon, 1995, p.1077-1086, 7 refs.

Concrete freezing, Concrete durability, Concrete strength, Mortars, Frost action, Freeze thaw tests, Cracking (fracturing)

50-2675

Thermoporometric approach in characterization of pore structure in concrete.

Matala, S.P., Concrete under severe conditions: environment and loading. Vol.2. Edited by K.Sakai, N. Banthia, and O.E. Gjørv, London, E & FN Spon, 1995, p.1087-1096, 6 refs.

Concrete freezing, Ice formation, Freezing front, Porosity

50-2676

Alteration of C-S-H and ASR gels in deteriorated concretes, Newfoundland, Canada.

Katayama, T., Bragg, D.J., Concrete under severe conditions: environment and loading. Vol.2. Edited by K.Sakai, N. Banthia, and O.E. Gjørv, London, E & FN Spon, 1995, p.1165-1174, 11 refs.

Concrete aggregates, Concrete durability, Frost action, Frost weathering, Canada—Newfoundland

50-2677

Combined effect of acid and deicer solutions on fiber-reinforced hardened cement pastes.

Fujii, T., Concrete under severe conditions: environment and loading. Vol.2. Edited by K.Sakai, N. Banthia, and O.E. Gjørv, London, E & FN Spon, 1995, p.1247-1256, 12 refs.

Reinforced concretes, Concrete durability, Cements, Chemical ice prevention, Salting, Corrosion

50-2678

Chemical attack of de-icing salts on portland cement concrete.

Sasatani, T., Torii, K., Kawamura, M., Dokyu, E., Concrete under severe conditions: environment and loading. Vol.2. Edited by K.Sakai, N. Banthia, and O.E. Gjørv, London, E & FN Spon, 1995, p.1265-1274, 10 refs.

Concrete durability, Cements, Salting, Corrosion

50-2679

Application of RCD concrete with blended cement containing slag to cold regions: execution at the Satsunaigawa Dam.

Yasunaka, S., Naka, H., Ide, Y., Concrete under severe conditions: environment and loading. Vol.2. Edited by K.Sakai, N. Banthia, and O.E. Gjørv, London, E & FN Spon, 1995, p.1292-1301, 4 refs.

Dams, Winter concreting, Concrete curing, Concrete strength, Concrete admixtures, Cement admixtures, Frost protection, Frost resistance, Japan—Hokkaido

50-2680

High performance slag ash concrete.

Pavlenko, S.I., Concrete under severe conditions: environment and loading. Vol.2. Edited by K.Sakai, N. Banthia, and O.E. Gjørv, London, E & FN Spon, 1995, p.1325-1337, 7 refs.

Reinforced concretes, Concrete pavements, Concrete strength, Concrete durability, Concrete admixtures, Concrete aggregates, Frost resistance, Freeze thaw tests

50-2681

Some behaviour of frost resistance of water permeable concrete.

Tokushige, H., Saeki, N., Mikami, T., Shimura, K., Concrete under severe conditions: environment and loading. Vol.2. Edited by K.Sakai, N. Banthia, and O.E. Gjørv, London, E & FN Spon, 1995, p.1338-1347, 4 refs.

Reinforced concretes, Cellular concretes, Concrete freezing, Concrete durability, Frost action, Frost resistance, Freeze thaw tests

50-2682

Study on effects of non-chloride and non-alkali type antifreezers on frost resistance of concrete at early ages.

Hama, Y., Kamada, E., Okudera, Y., Concrete under severe conditions: environment and loading. Vol.2. Edited by K.Sakai, N. Banthia, and O.E. Gjørv, London, E & FN Spon, 1995, p.1348-1357, 3 refs.

Winter concreting, Concrete hardening, Concrete strength, Concrete admixtures, Antifreezes, Frost resistance, Frost protection

50-2683

Dynamic modulus of elasticity and durability of no-fines concrete.

Tamai, M., Tanaka, M., Concrete under severe conditions: environment and loading. Vol.2. Edited by K.Sakai, N. Banthia, and O.E. Gjørv, London, E & FN Spon, 1995, p.1358-1367, 5 refs.

Concrete aggregates, Cements, Concrete admixtures, Concrete strength, Concrete durability, Frost resistance, Freeze thaw tests

50-2684

Micromechanical study on deterioration of concrete due to freezing and thawing.

Hori, M., Yanagisawa, E., Morihiro, H., Concrete under severe conditions: environment and loading. Vol.2. Edited by K.Sakai, N. Banthia, and O.E. Gjørv, London, E & FN Spon, 1995, p.1408-1417, 20 refs.

Concrete freezing, Concrete durability, Concrete strength, Frost action, Microstructure, Crack propagation, Thermal stresses, Mathematical models

50-2685

Strength and toughness of fiber reinforced concrete at low temperatures.

Banthia, N., Qu, L., Sakai, K., Concrete under severe conditions: environment and loading. Vol.2. Edited by K.Sakai, N. Banthia, and O.E. Gjørv, London, E & FN Spon, 1995, p.1428-1437, 9 refs.

Reinforced concretes, Concrete freezing, Concrete strength, Composite materials, Low temperature tests

50-2686

Mechanism of deterioration of concrete under severe environment.

Podval'nyĭ, A.M., Concrete under severe conditions: environment and loading. Vol.2. Edited by K.Sakai, N. Banthia, and O.E. Gjørv, London, E & FN Spon, 1995, p.1468-1478, 11 refs.

Reinforced concretes, Concrete aggregates, Concrete durability, Concrete strength, Frost action, Frost weathering, Cracking (fracturing), Mathematical models

50-2687

Bond between a reinforcement bar and concrete at low temperatures.

Vandewalle, L., Concrete under severe conditions: environment and loading. Vol.2. Edited by K.Sakai, N. Banthia, and O.E. Gjørv, London, E & FN Spon, 1995, p.1590-1599, 4 refs.

Reinforced concretes, Concrete freezing, Concrete strength, Low temperature tests

50-2688

Full scale impact test of PC rock-shed with shock absorbing system.

Sato, M., Nishi, H., Sugata, N., Kishi, N., Concrete under severe conditions: environment and loading. Vol.2. Edited by K.Sakai, N. Banthia, and O.E. Gjørv, London, E & FN Spon, 1995, p.1623-1632, 3 refs.

Prestressed concretes, Concrete structures, Concrete strength, Landslides, Avalanche engineering, Impact tests

50-2689

Shock absorbing performance of a three-layered cushion system using RC core slab reinforced with AFRP rods.

Mikami, H., Tamura, T., Sato, M., Kishi, N., Concrete under severe conditions: environment and loading. Vol.2. Edited by K.Sakai, N. Banthia, and O.E. Gjørv, London, E & FN Spon, 1995, p.1633-1643, 8 refs.

Reinforced concretes, Concrete slabs, Concrete structures, Concrete strength, Composite materials, Avalanche engineering, Impact tests

50-2690

Full scale test on impact resistance of PC girder.

Sato, M., Nishi, H., Nakano, O., Kishi, N., Matsuoka, K.G., Concrete under severe conditions: environment and loading. Vol.2. Edited by K.Sakai, N. Banthia, and O.E. Gjørv, London, E & FN Spon, 1995, p.1644-1652, 6 refs.

Reinforced concretes, Concrete structures, Concrete strength, Landslides, Avalanche engineering, Impact tests

50-2691

Fracture of fiber reinforced concrete under impact.

Banthia, N., Mindess, S., Trottier, J.F., Concrete under severe conditions: environment and loading. Vol.2. Edited by K.Sakai, N. Banthia, and O.E. Gjørv, London, E & FN Spon, 1995, p.1664-1674, 22 refs.

Reinforced concretes, Concrete strength, Composite materials. Impact tests

50-2692

Temporal changes in shelf water of the southern Ross Sea.

Hellmer, H.H., Jacobs, S.S., *Antarctic journal of the United States,* 1994, 29(5), p.123-124, 4 refs.

Sea ice, Oceanographic surveys, Antarctica—Ross Sea

The authors completed an 800 km transect parallel to the Ross Ice Shelf edge, on the USCGC *Polar Sea* from Feb. 4 to 10, 1994. On 42 stations, most begun less than 1 km from the ice front, conductivity-temperature-depth (CTD) measurements were made to within 10 m of the bottom. At several locations the ship drifted rapidly in the coastal current, resulting in tow-yo vertical profiles. The casts were accompanied by sampling for salinity, dissolved oxygen, total carbon dioxide (TCO_2), chlorofluorocarbons, helium, tritium, isotopic oxygen-18, and nutrients. On alternate stations water samples were obtained from the upper 150 m for two other projects. Portions of this transect repeat earlier sections along the Ross Ice Shelf edge, some taken more than 25 years ago. A comparison of preliminary results with earlier observations between 173°W and 174°W reveals that the 1994 data are cooler by approximately 0.4°C and fresher by approximately 0.06 practical salinity units (psu) in the salinity range from 34.40 to 34.55 psu.

* **50-2693**

Evolving front of the Ross Ice Shelf.

Keys, H.J.R., Jacobs, S.S., Brigham, L.W., *Antarctic journal of the United States,* 1994, 29(5), p.125-126, 5 refs.

Ice shelves, Flow rate, Mapping, Variations, Antarctica—Ross Ice Shelf, Antarctica—Getz Ice Shelf

In Feb. and Mar. of 1994, the authors measured the position and height of several west antarctic ice sheet fronts, using radar ranging and a sextant from the USCGC *Polar Sea* and the *R/V Nathaniel B. Palmer.* The fronts of the Getz Ice Shelf and other features displayed a wide variety of changes from previously mapped locations but no consistent overall trend. During the last few decades some of the records have become accurate and frequent enough for estimates of short-term temporal changes in the ice fronts. Here, the authors focus upon the Ross Ice Shelf edge which has continued its northward advance. At its western extremity, the ice front is now north of Cape Bird on Ross I., substantially beyond any position recorded in the last 150 years. The maximum advance rate calculated, 1.6 km/y northward relative to a 1987 position, is larger than that estimated for the 1962-1985 interval, and occurred at the northeast headland of a new feature referred to as "Polar Sea Bay."

50-2694

High-resolution seismic survey of the Ross Sea continental shelf: implications for ice-sheet retreat behavior.

Shipp, S.S., Anderson, J.B., *Antarctic journal of the United States,* 1994, 29(5), p.137-138, 5 refs.

Glacial geology, Sedimentation, Seismic surveys, Ice sheets, Variations, Antarctica—Ross Sea

Approximately 4,100 km of high-resolution seismic data and 45 piston cores and grab samples were collected on the Ross Sea continental shelf. Preliminary analysis of seismic data reveals that the majority of the continental shelf has thin to absent late Pleistocene sedimentary cover. The sediment thickens on the outer shelf, within the troughs, to a maximum of 120 milliseconds. It is suggested that the bank tops in the western Ross Sea probably were the sites of thinner, perhaps stagnant ice. In the eastern Ross Sea, ice probably did not pin on the banks dividing ice streams. Due to its relatively shallower nature, ice in the eastern Ross Sea would have remained grounded longer in the event of sea-level rise.

50-2695

Evidence for a fluidized till deposit on the Ross Sea continental shelf.

Jahns, E., *Antarctic journal of the United States,* 1994, 29(5), p.139-141, 4 refs.

Marine geology, Sedimentation, Glacial deposits, Ice sheets, Flow rate, Ice melting, Antarctica—Ross Sea

The petrography of piston cores and grab samples taken in the Ross Sea to determine the nature of the diamicton deposited there was analyzed. The study's objectives were to determine whether or not the diamicton was a fluidized till layer and to use variations in petrographic composition of the diamicton to distinguish between ice-stream provenances. The author suggests that this work supports the hypothesis that sampled portions of the uppermost massive diamicton in the Ross Sea represent the deposition of a sub-ice stream fluidized-till layer.

50-2696

Structure of ice Ih from analysis of single-crystal neutron diffuse scattering.

Nield, V.M., Whitworth, R.W., *Journal of physics: condensed matter,* Oct. 23, 1995, 43(7), p.8259-8271, 26 refs.

Ice physics, Ice crystal structure, Ice crystal optics, Molecular structure, Orientation, Neutron scattering, Ice spectroscopy, Deuterium oxide ice, Ice models, Statistical analysis

50-2697

Structural characteristics of hydrogen-bonded networks in water and ice systems.

Dore, J.C., Blakey, D.M., *Journal of molecular liquids,* Nov. 1995, Vol.65-66, Yamada Conference, 42nd, Nagoya, Japan, Dec. 11-15, 1994. Proceedings. Structure, fluctuation and relaxation in solutions. Edited by N. Nomura et al, p.85-90, 13 refs.

Water structure, Molecular structure, Supercooling, Ice physics, Neutron diffraction, Amorphous ice, Hydrogen bonds, Thermodynamic properties

50-2698

Mesh size and diffusive characteristics of semicrystalline poly(vinyl alcohol) membranes prepared by freezing/thawing techniques.

Hickey, A.S., Peppas, N.A., *Journal of membrane science,* Nov. 30, 1995, Vol.65-66, p.229-237, 46 refs.

Ice physics, Polymers, Solutions, Frozen liquids, Films, Freeze thaw cycles, Phase transformations, Solubility, Permeability, Fluid dynamics, Thermal diffusion, Temperature effects

50-2699

Backscattering by and propagation through the melting layer of precipitation: a new polarimetric model.

Russchenberg, H.W.J., Ligthart, L.P., *IEEE transactions on geoscience and remote sensing,* Jan. 1996, 34(1), p.3-14, 19 refs.

Precipitation (meteorology), Radar echoes, Snow physics, Wave propagation, Backscattering, Snowflakes, Snow melting, Snow density, Polarization (waves), Mathematical models, Simulation

50-2700

Polarimetric detection of objects buried in snowpack by a synthetic aperture FM-CW radar.

Yamaguchi, Y., Moriyama, T., *IEEE transactions on geoscience and remote sensing,* Jan. 1996, 34(1), p.45-51, 13 refs.

Synthetic aperture radar, Radar echoes, Remote sensing, Scattering, Subsurface investigations, Subsurface structures, Detection, Snow cover structure, Snow cover effect, Imaging, Wave propagation, Polarization (waves), Simulation

50-2701

On the dimensionality of multiparameter microwave image data from thin sea ice in the Labrador Sea.

Collins, M.J., Livingstone, C.E., *IEEE transactions on geoscience and remote sensing,* Jan. 1996, 34(1), p.114-136, 34 refs.

Sea ice distribution, Young ice, Classifications, Remote sensing, Radar echoes, Synthetic aperture radar, Radiometry, Scattering, Image processing, Data processing, Correlation, Labrador Sea

50-2702

Ice sheet motion and topography from radar interferometry.

Kwok, R., Fahnestock, M.A., *IEEE transactions on geoscience and remote sensing,* Jan. 1996, 34(1), p.189-200, 14 refs.

Ice sheets, Topographic features, Topographic effects, Velocity measurement, Glacier flow, Remote sensing, Synthetic aperture radar, Spaceborne photography, Image processing, Electromagnetic properties, Correlation, Greenland

50-2703

Comparison of ice-sheet satellite altimeter retracking algorithms.

Davis, C.H., *IEEE transactions on geoscience and remote sensing,* Jan. 1996, 34(1), p.229-236, 18 refs.

Ice sheets, Ice growth, Glacier mass balance, Ice surveys, Remote sensing, Topographic surveys, Height finding, Spacecraft, Radar echoes, Orientation, Correlation, Scattering, Data processing, Greenland, Antarctica

The NASA and European Space Agency (ESA) retracking algorithms are compared with an algorithm based upon a combined surface and volume (S/V) scattering model. First, the S/V, NASA, and ESA algorithms were used to retrack over 1.3 million altimeter return waveforms from the Greenland and antarctic ice sheets. The surface elevations from the S/V algorithm were compared with the elevations produced by the NASA and ESA algorithms to determine the relative accuracy of these algorithms when subsurface volume scattering occurs. By analyzing several thousand satellite crossover points from the Greenland and antarctic ice sheets, the repeatability of the surface elevations derived from the different retracking algorithms was estimated. Since previous ice-sheet growth estimates have been based upon the elevations produced by the NASA retracking algorithm, further work needs to be conducted to determine if the $ESA_{25\%}$ or S/V retracking algorithms produce growth estimates that are significantly different from the previous estimates. (Auth. mod.)

50-2704

Global identification of snowcover using SSM/I measurements.

Grody, N.C., Basist, A.N., *IEEE transactions on geoscience and remote sensing,* Jan. 1996, 34(1), p.237-249, 28 refs.

Snow cover distribution, Snow surveys, Sensor mapping, Detection, Remote sensing, Classifications, Spacecraft, Radiometry, Scattering, Data processing, Accuracy

50-2705

Geochemical correlation between coarse and fine fractions of till in southern Finland.

Tarvainen, T., *Journal of geochemical exploration,* Nov. 1995, 54(3), p.187-198, 37 refs.

Glacial deposits, Geological surveys, Mapping, Glacial geology, Bedrock, Geochemistry, Lithology, Mineralogy, Soil texture, Sampling, Correlation, Finland

50-2706

Soil freeze-thaw effects on bank erodibility and stability.

Gatto, L.W., SR 95-24, *U.S. Army Cold Regions Research and Engineering Laboratory. Special report,* Sep. 1995, 17p., ADA-301 818, 61 refs.

Banks (waterways), Frozen ground mechanics, Soil erosion, Stability, Soil strength, Soil structure, Soil water migration, Ground ice, Seasonal freeze thaw, Thaw weakening, Frost heave, Freeze thaw cycles, Seasonal variations

When air temperature is below ground temperature, a thermal gradient is established in the soil that causes the soil to lose heat to the atmosphere. When the soil has lost sufficient heat for soil water to freeze, the newly formed ice changes soil structure by disaggregating, separating, and reorienting soil particles. The suction set up within the freezing soil draws water to the freezing zone through the film of unfrozen water surrounding soil particles, supplying additional water for freezing, so the volume of ice increases. When appropriate thermal and water supply conditions are in place, disseminated ice lenses can form in the soil. As the ice lenses grow, the soil surface is heaved in the direction of heat flow from the soil. In this weakened state, thawed bank soils are usually more easily eroded by raindrop impacts, overland flows, river and lake ice forces, currents and waves, and are highly susceptible to mass failures. In some instances newly thawed soils are weaker than at any other time of the year. Some studies show that processes related to bank soil freezing and thawing cause more bank recession annually than other processes in areas where seasonal frost forms. However, with time, the strength of the thawed soil returns as excess water drains from the soil, and soil particle packing and interlocking increase. Therefore, frost-induced reductions in soil strength and soil particle displacements must be included in bank migration and bank erosion models to be applied in regions with seasonal soil frost.

50-2707

Ice jam flooding on the Missouri River near Williston, North Dakota.

Wuebben, J.L., Gagnon, J.J., CR 95-19, *U.S. Army Cold Regions Research and Engineering Laboratory,* Sep. 1995, 25p., ADA-301 513, 29 refs.

River flow, Water level, Flooding, Ice jams, Ice cover effect, Ice conditions, Classifications, Flood forecasting, Flow control, Ice control, Countermeasures, United States—North Dakota—Missouri River

This investigation focuses on ice-related flooding along the Missouri River, just below the confluence with the Yellowstone River near Williston, ND. This area is at the upper end of Lake Sakakawea. With the closure of Garrison Dam in 1953, Lake Sakakawea began filling, reaching operational levels in 1965. Changes in the hydraulics, sedimentation and ice regime of the Missouri River caused by the impoundment have led to an increase in the potential for overbank flooding. This report describes the ice regime assessment that was conducted to characterize ice jam flooding, the development of a method to predict the potential for ice jam occurrence and severity, and potential flood mitigation measures.

50-2708

Estimated snow parameters for vehicle mobility modeling in Korea, Germany and interior Alaska.

Horrigan, T., Bates, R.E., SR 95-23, *U.S. Army Cold Regions Research and Engineering Laboratory. Special report,* Sep. 1995, 7p., ADA-301 154, 11 refs.

Snow vehicles, Cold weather performance, Snow cover effect, Trafficability, Snow physics, Classifications, Snow density, Snow depth, Meteorological factors, Seasonal variations, Forecasting, Korea, Germany, United States—Alaska

Snow is a crucial factor affecting the U.S. Army's operations in cold regions. Values for snow depth and snow density are needed for vehicle mobility studies, but unfortunately the available historical records of these parameters tend to be relatively sparse. This report deals with the estimation of snow density and snow depth from readily available parameters such as air temperature and wind speed. As a basis for further study, the authors have summarized previous work in three areas of particular interest to the U.S. Army's vehicle mobility programs: Korea, Germany, and Alaska. Empirical models are presented for estimating snow parameters in these regions.

50-2709

Light scattering by hexagonal ice prisms. 1. Small scattering angles.

Petrushin, A.G., *Atmospheric and oceanic physics,* May-June 1994, 30(3), p.291-299, Translated from Izvestiia. Fizika atmosfery i okeana. 6 refs.

Cloud physics, Radiance, Light scattering, Ice crystal optics, Ice crystal structure, Orientation, Wave propagation, Indexes (ratios), Statistical analysis

50-2710

Effect of scattered light on accuracy of measurements of thin cloud optical thickness by a sun photometer.

Zege, E.P., Katsev, I.L., Polonskiĭ, I.N., Prikbach, A.S., *Atmospheric and oceanic physics,* May-June 1994, 30(3), p.308-316, Translated from Izvestiia. Fizika atmosfery i okeana. 11 refs.

Cloud physics, Cloud cover, Aerosols, Optical properties, Atmospheric density, Photometry, Light scattering, Ice crystal optics, Ice crystal size, Accuracy, Mathematical models

50-2712

Model for the development of sod-podzolic soils by windthrow.

Vasenev, I.I., Targulian, V.O., *Eurasian soil science,* Oct. 1995, 27(10), p.1-16, Translated from Pochvovedenie. 38 refs.

Taiga, Podsol, Forest soils, Forest ecosystems, Soil formation, Soil physics, Substrates, Organic soils, Decomposition, Nutrient cycle, Wind factors

50-2713

Biological productivity of Siberian ecosystems.

Bazilevich, N.I., *Eurasian soil science,* Oct. 1995, 27(10), p.44-52, Translated from Pochvovedenie. 8 refs.

Tundra soils, Tundra vegetation, Forest ecosystems, Biomass, Classifications, Biogeography, Russia—Siberia

50-2714

Seasonal freezing and soil erosion during snowmelt.

Demidov, V.V., Ostroumov, V.E., Nikitishena, I.A., Lichko, V.I., *Eurasian soil science,* Oct. 1995, 27(10), p.78-87, Translated from Pochvovedenie. 21 refs.

Soil erosion, Soil tests, Water erosion, Snow hydrology, Snowmelt, Runoff, Seasonal freeze thaw, Frost penetration, Ground thawing, Seepage, Saturation, Absorption, Soil tests

50-2715

Impact of fires on mountain sod-taiga soils under larch forests in Mongolia.

Krasnoshchekov, IU.N., *Eurasian soil science,* Oct. 1995, 27(10), p.88-98, Translated from Pochvovedenie. 15 refs.

Taiga, Forest ecosystems, Forest soils, Soil formation, Surface temperature, Forest fires, Environmental impact, Frozen ground chemistry, Permeability, Soil tests, Mongolia

50-2716

Lake-level fluctuations at Ljustjärnen, central Sweden and their implications for the Holocene climate of Scandinavia.

Almquist-Jacobson, H., *Palaeogeography, palaeoclimatology, palaeoecology,* Nov. 1995, 118(3-4), p.269-290, 71 refs.

Paleoclimatology, Paleoecology, Climatic changes, Moisture transfer, Lakes, Water level, Water balance, Periodic variations, Lacustrine deposits, Quaternary deposits, Sampling, Palynology, Radioactive age determination, Correlation, Sweden

50-2717

Ice flow vectors on the debris-mantled Tasman Glacier, 1957-1986.

Kirkbride, M., *Geografiska annaler,* 1995, 77A(3), p.147-157, 45 refs.

Glacier flow, Orientation, Alpine glaciation, Glacier surfaces, Glacier tongues, Photogrammetric surveys, Sediment transport, Sedimentation, Velocity measurement, Thermokarst, Periodic variations, New Zealand—Tasman Glacier

50-2718

Forms of unusual patterned ground: examples from the Falkland Islands, South Atlantic.

Wilson, P., *Geografiska annaler,* 1995, 77A(3), p.159-165, 17 refs.

Soil formation, Geomorphology, Patterned ground, Polygonal topography, Soil formation, Sorting, Soil analysis, Sediment transport, Eolian soils, Falkland Islands

50-2719

Thermal conductivity of normal and deuterated tetrahydrofuran clathrate hydrates.

Andersson, O., Suga, H., *Journal of physics and chemistry of solids,* Jan. 1996, 57(1), p.125-132, 46 refs.

Frozen liquids, Ice physics, Hydrocarbons, Solutions, Phase transformations, Clathrates, Hydrates, Latticed structures, Thermal conductivity, Resonance, Temperature effects, Low temperature tests

50-2720

Numerical model of flow in ice-covered channel.

Yoon, J.Y., Patel, V.C., Ettema, R., *Journal of hydraulic engineering,* Jan. 1996, 122(1), p.19-26, 14 refs.

River flow, River ice, Ice water interface, Floating ice, Ice cover effect, Surface roughness, Hydraulics, Turbulent flow, Mathematical models, Bottom topography, Topographic effects

50-2721

Methods for measuring discharge under ice cover—discussion.

Engel, P., Lau, Y.L., *Journal of hydraulic engineering,* Jan. 1996, 122(1), p.52-54, 4 refs. For paper under discussion see 49-853.

River flow, River ice, Ice water interface, Surface roughness, Turbulent flow, Flow measurement, Velocity measurement, Hydraulics, Analysis (mathematics), Accuracy

50-2722

Isotopic evidence for shifts in atmospheric circulation patterns during the late Quaternary in mid-North America.

Amundson, R., Chadwick, O., Kendall, C., Wang, Y., DeNiro, M., *Geology,* Jan. 1996, 24(1), p.23-27, 43 refs.

Paleoclimatology, Climatic changes, Precipitation (meteorology), Atmospheric circulation, Quaternary deposits, Soil analysis, Sampling, Isotope analysis, Correlation

50-2723

Influence of a finite glaciation phase on predictions of post-glacial isostatic adjustment.

Mitrovica, J.X., Davis, J.L., *Earth and planetary science letters,* Dec. 1995, 136(3-4), p.343-361, 46 refs.

Pleistocene, Glaciation, Glacial geology, Ice sheets, Ice loads, Ice cover effect, Tectonics, Isostasy, Sea level, Viscoelasticity

50-2724

Organic compounds produced by photolysis of realistic interstellar and cometary ice analogs containing methanol.

Bernstein, M.P., Sandford, S.A., Allamandola, L.J., Chang, G., Scharberg, M.A., *Astrophysical journal,* Nov. 20, 1995, 454(1)pt.1, p.327-344, 71 refs.

Extraterrestrial ice, Ice physics, Ice composition, Simulation, Ice spectroscopy, Infrared spectroscopy, Photochemical reactions, Geochemistry, Organic nuclei, Spectra, Chemical analysis

50-2725

Evaluation of the cold regions aspects of mobility and hardening of the mobile test bed at Malmstrom Air Force Base, Great Falls, Montana. Final report.

Blaisdell, G.L., Chamberlain, E.J., Mellor, M., MP 3762, *U.S. Army Cold Regions Research and Engineering Laboratory,* Aug. 1987, 46p. + appends., 8 refs.

Soil tests, Frozen ground mechanics, Clay soils, Substrates, Soil strength, Soil stabilization, Hardness tests, Military equipment, Tractors, Stability, Cold weather performance, Traction, Soil trafficability, Frozen ground mechanics, United States—Montana—Great Falls

During the latter part of the winter season of 1986-87, an evaluation of the mobility and hardening capabilities of the Mobile Test Bed (MTB) was made at Malmstrom AFB, Great Falls, MT. The MTB is a pre-prototype model of the Hard Mobile Launcher (HML) being evaluated for deployment in the U.S. Air Force Small ICBM Program. The U.S. Army Cold Regions Research and Engineering Laboratory (CRREL) was contracted by the Ballistic Missile Office (BMO) to assist in the evaluation of the performance of this vehicle under winter and spring conditions. The HML is required to traffic gravel roads in order to seek a place to harden and survive an air

blast. Assistance was requested in three specific technical areas: 1) on- and off-road mobility on seasonally varying terrain; 2) evaluation of hardening transition activities including the design of cutters to emplace grousers located on the underside of the HML into frozen soil and gravel, the performance of the cutters, and the tractive effort available to accomplish this task; and 3) characterizing and modeling the seasonally varying strength of on- and off-road terrain in support of the mobility and hardening transition activities. These tasks were of particular importance because the current test bed version of the HML was designed for noncohesive soils of the desert Southwest, whereas the soils in the current test area are dominated by clays and clayey gravels which have very high strengths when frozen and undergo large seasonal changes in strength.

50-2726

Palaeoecology of a *Donatia-Astelia* cushion bog, Magellanic Moorland - subantarctic evergreen forest transition, southern Tierra del Fuego, Argentina.

Heusser, C.J., *Review of palaeobotany and palynology*, Dec. 1995, 89(3/4), p.429-440, 52 refs.

Paleobotany, Paleoclimatology, Paleoecology, Swamps, Precipitation (meteorology), Stratigraphy, —Tierra del Fuego

Cushion bogs are an integral feature of Magellanic Moorland of subantarctic southernmost Chile. The palaeoecology of an outlying cushion-type bog at Bahia Moat, located in moorland-forest vegetation on the southeastern coast of Argentine Tierra del Fuego, traces the 7000 yr development of the site, local and surrounding vegetational history, and palaeoclimate. Pollen and spore stratigraphy indicates that cushion plants *Donatia* and *Astelia* characterized the bog over the past 2600 yr. Regional vegetation became forest-dominated after 4750 yr BP, following displacement of open communities of Gramineae and Compositae by the evergreens *Nothofagus betuloides* and *Drimys winteri*. Increased precipitation/evaporation ratios in effect during the late Holocene were coupled with lower temperatures, contrasting less humid, moderated conditions with high fire incidence prevailing early in the bog record. (Auth.)

50-2727

Dust: a diagnostic of the hydrologic cycle during the last glacial maximum.

Yung, Y.L., Lee, T., Wang, C.H., Shieh, Y.T., *Science*, Feb. 16, 1996, 271(5251), p.962-963, 30 refs.

Dust, Ice cores, Water temperature, Hydrologic cycle, Antarctica, Greenland

Dust concentrations in ice of the last glacial maximum (LGM) are high in ice cores from Greenland and Antarctica. The magnitude of the enhancements can be explained if the strength of the hydrologic cycle during the LGM was about half of that at present. This notion is consistent with a large decrease (5°C) in ocean temperature during the LGM, as recently deduced from measurements of strontium and calcium in corals. (Auth.)

50-2728

Space-time distribution of temperature inversions in the arctic atmospheric boundary layer.

Nagurnyĭ, A.P., *Annales geophysicae*, Oct. 1995, 13(10), p.1087-1092, 15 refs.

Polar atmospheres, Climatology, Atmospheric boundary layer, Air temperature, Surface temperature, Temperature inversions, Ice heat flux, Ice cover thickness, Sounding, Statistical analysis, Periodic variations

50-2729

Experimental data of the combined *in situ* and model study of snow cover in a field catchment area.

Shutov, V.A., *Water resources*, Nov.-Dec. 1995, 22(6), p.595-602, Translated from Vodnye resursy. 20 refs.

Snow hydrology, Snow cover distribution, Hydrologic cycle, Snowmelt, Water storage, Snow water content, Topographic effects, Analysis (mathematics)

50-2730

Transient hydrogeological controls on the chemistry of a seepage lake.

Krabbenhoft, D.P., Webster, K.E., *Water resources research*, Sep. 1995, 31(9), p.2295-2305, 26 refs.

Limnology, Lake water, Hydrogeochemistry, Snow hydrology, Snowmelt, Seepage, Littoral zone, Ground water, Subsurface drainage, Water flow, Sampling, Ion density (concentration)

50-2731

Chemical composition of newly shed needle litter of Scots pine and some other pine species in a climatic transect. X. Long term decomposition in a Scots pine forest.

Berg, B., et al, *Canadian journal of botany*, Sep. 1995, 73(9), p.1423-1435, With French summary. 29 refs.

Forest ecosystems, Trees (plants), Plant tissues, Decomposition, Forest soils, Soil composition, Chemical composition, Organic soils, Sampling, Climatic factors

50-2732

Leaf traits and shoot performance of an evergreen shrub, *Ledum palustre* ssp. *decumbens*, in accordance with latitudinal change.

Kudo, G., *Canadian journal of botany*, Sep. 1995, 73(9), p.1451-1456, With French summary. 35 refs.

Plant physiology, Plant ecology, Arctic landscapes, Alpine landscapes, Tundra vegetation, Taiga, Cold weather survival, Growth, Photosynthesis, Nutrient cycle

50-2733

Low temperature growth, freezing survival, and production of antifreeze protein by the plant growth promoting rhizobacterium *Pseudomonas putida* GR12-2.

Sun, X.Y., Griffith, M., Pasternak, J.J., Glick, B.R., *Canadian journal of microbiology*, Sep. 1995, 41(9), p.776-784, With French summary. 35 refs.

Plant ecology, Cryobiology, Soil microbiology, Growth, Roots, Bacteria, Cold weather survival, Antifreezes, Ice crystal growth, Simulation, Temperature effects

50-2734

Sensitivity to prescribed changes in sea surface temperature and sea ice in doubled carbon dioxide experiments.

Timbal, B., Mahfouf, J.F., Royer, J.F., Cariolle, D., *Climate dynamics*, Nov. 1995, 12(1), p.1-20, 33 refs.

Climatology, Climatic changes, Classifications, Atmospheric composition, Carbon dioxide, Global warming, Air ice water interaction, Sea ice distribution, Atmospheric boundary layer, Surface temperature, Temperature variations, Simulation

50-2735

New snow parameterization for the Météo-France climate model. Part 1: validation in stand-alone experiments.

Douville, H., Royer, J.F., Mahfouf, J.F., *Climate dynamics*, Nov. 1995, 12(1), p.21-35, 56 refs.

Climatology, Snow hydrology, Snow cover distribution, Snow cover stability, Atmospheric boundary layer, Snow air interface, Surface temperature, Heat transfer coefficient, Albedo, Mathematical models, Simulation, Vegetation factors

50-2736

New snow parameterization for the Météo-France climate model. Part 2: validation in a 3-D GCM experiment.

Douville, H., Royer, J.F., Mahfouf, J.F., *Climate dynamics*, Nov. 1995, 12(1), p.37-52, 44 refs.

Climatology, Surface temperature, Snow hydrology, Snow cover stability, Snow cover distribution, Albedo, Snow cover effect, Simulation, Hydrologic cycle

50-2737

On the interannual variability of precipitation and runoff in the Mackenzie drainage basin.

Bjornsson, H., Mysak, L.A., Brown, R.D., *Climate dynamics*, Nov. 1995, 12(1), p.67-76, 32 refs.

Climatology, River basins, Estuaries, Precipitation (meteorology), Moisture transfer, Runoff, Sea ice distribution, Ice cover effect, Periodic variations, Correlation, Canada—Northwest Territories—Mackenzie River

50-2738

Indentation pressure in ice/vertical structure interaction.

Takeuchi, T., Saeki, H., *International journal of offshore and polar engineering*, Dec. 1995, 5(4), p.279-285, 7 refs.

Ice mechanics, Lake ice, Offshore structures, Ice solid interface, Fracture zones, Impact tests, Mechanical tests, Ice pressure, Cracking (fracturing), Correlation

50-2739

Magnetic resonance imaging assisted temperature calculations in multiple domain freezing problems.

Hong, J.S., Rubinsky, B., *Journal of heat transfer*, Nov. 1995, 117(4), p.1079-1082, 10 refs.

Phase transformations, Frozen liquids, Magnetic resonance, Imaging, Temperature distribution, Heat transfer, Analysis (mathematics), Liquid solid interfaces

50-2740

Laboratory measurements of the drag force on a family of two-dimensional ice keel models in a two-layer flow.

Pite, H.D., Topham, D.R., van Hardenberg, B.J., *Journal of physical oceanography*, Dec. 1995, 25(12), p.3008-3031, 67 refs.

Oceanography, Sea ice, Ice water interface, Pressure ridges, Ice bottom surface, Topographic effects, Hydrodynamics, Gravity waves, Wave propagation, Ice cover effect, Simulation

50-2741

No iridium anomaly after the 1908 Tunguska impact: evidence from a Greenland ice core.

Rasmussen, K.L., Clausen, H.B., Kallemeyn, G.W., *Meteoritics*, Nov. 1995, 30(6), p.634-638, 36 refs.

Ice sheets, Ice cores, Ice composition, Sampling, Falling bodies, Explosion effects, Dust, Fallout, Neutron activation analysis, Geochemistry, Greenland—Crête

50-2742

Development of an ice information system (IIS) to be implemented at the NERSC.

Jacob, A., *Computers & geosciences*, Oct. 1995, 21(8), p.937-946, 27 refs.

Sea ice distribution, Ice surveys, Ice forecasting, Ice models, Ice reporting, Geophysical surveys, Remote sensing, Sensor mapping, Data processing, Computer applications

50-2743

Interdecadal climate variability in the subpolar North Atlantic.

Wohlleben, T.M.H., Weaver, A.J., *Climate dynamics*, Oct. 1995, 11(8), p.459-467, 44 refs.

Marine atmospheres, Climatology, Surface temperature, Climatic changes, Air ice water interaction, Ice cover effect, Ocean currents, Advection, Periodic variations, Statistical analysis

50-2744

Cryomicroscopic determination of ice crystal growth in the system 2,4-pentanediol/water.

Mehl, P.M., *Journal of crystal growth*, Jan. 1, 1996, 158(1-2), p.177-180, 11 refs.

Ice physics, Ice crystal growth, Solutions, Phase transformations, Ice water interface, Heterogeneous nucleation, Nucleation rate, Temperature measurement, Supercooling, Electron microscopy

50-2745

Influence of temperature on crystallization of lactose in ice-cream.

Livney, Y.D., Donhowe, D.P., Hartel, R.W., *International journal of food science & technology*, June 1995, 30(3), p.311-320, 14 refs.

Colloids, Ice crystal growth, Frozen liquids, Ice nuclei, Heterogeneous nucleation, Phase transformations, Supersaturation, Temperature effects, Nucleation rate

50-2746

Development of the middle and lower course of the Weser River during the Late Pleistocene.

Meinke, K., *Zeitschrift für Geomorphologie. Supplementband,* Oct. 1995, Suppl.100, p.1-13, With German summary. 26 refs.

Pleistocene, Geomorphology, Geologic processes, Periglacial processes, Floodplains, Water erosion, Terraces, Sedimentation, Stratigraphy, Boreholes, Germany—Weser River

50-2747

Middle Neckar as an example of fluvio-morphological processes during the Middle and Late Quaternary period.

Bibus, E., Wesler, J., *Zeitschrift für Geomorphologie. Supplementband,* Oct. 1995, Suppl.100, p.15-26, With German and French summaries. 25 refs.

Geomorphology, Geological surveys, Pleistocene, Quaternary deposits, Floodplains, Landscape development, Sedimentation, Stratigraphy, Classifications, Terraces, Periodic variations, Germany—Neckar River

50-2748

Valley bottoms in the late Quaternary.

Schirmer, W., *Zeitschrift für Geomorphologie. Supplementband,* Oct. 1995, Suppl.100, p.27-51, With German summary. Refs. p.48-59.

Geomorphology, Pleistocene, Geological surveys, Valleys, Periglacial processes, Floodplains, Terraces, Water erosion, Sedimentation, Stratigraphy, Quaternary deposits

50-2749

Fluvial geomorphodynamics in the Danube River valley and tributary river systems near Regensburg during the Upper Quaternary—theses, questions and conclusions.

Buch, M.W., Heine, K., *Zeitschrift für Geomorphologie. Supplementband.* Oct. 1995, Suppl.100, p.53-64, With German summary. Refs. p.62-64.

Pleistocene, Quaternary deposits, Geomorphology, River basins, Landscape development, Floodplains, Sedimentation, Water erosion, Germany—Danube River

50-2750

Wutach gorge in SW Germany: late Würmian (periglacial) downcutting versus Holocene processes.

Einsele, G., Ricken, W., *Zeitschrift für Geomorphologie. Supplementband.* Oct. 1995, Suppl.100, p.65-87, With German summary. 47 refs.

Geomorphology, Pleistocene, River basins, Surface drainage, Water erosion, Valleys, Mass balance, Quaternary deposits, Landscape development, Periglacial processes, Germany—Wutach River

50-2751

Fluvial dynamics in the periglacial belt of the central Austrian Alps.

Höfner, T., *Zeitschrift für Geomorphologie. Supplementband,* Oct. 1995, Suppl.100, p.159-166, With German summary. 23 refs.

Alpine landscapes, Geomorphology, River basins, Water erosion, Quaternary deposits, Pleistocene, Periglacial processes, Sediment transport, Paleoecology, Paleoclimatology, Computerized simulation, Austria—Alps

50-2752

Proceedings.

ACI International Conference on Evaluation and Rehabilitation of Concrete Structures and Innovations in Design, Hong Kong, Dec. 2-6, 1991, Malhotra, V.M., ed, ACI publication SP-128, Detroit, American Concrete Institute, 1992, 1482p. (2 vols.), Refs. passim. For selected papers see 50-2753 through 50-2763.

DLC TA680.E94 1991

Concrete structures, Concrete durability, Concrete strength, Reinforced concretes, Frost resistance, Frost action, Freeze thaw tests

50-2753

Highly elastic surface coating to protect structures exposed to coastal/marine environments.

Swamy, R.N., Tanikawa, S., ACI International Conference on Evaluation and Rehabilitation of Concrete Structures and Innovations in Design, Hong Kong, Dec. 2-6, 1991. ACI publication SP-128. Vol.1. Edited by V.M. Malhotra, Detroit, American Concrete Institute, 1992, p.1-18, 17 refs.

Concrete structures, Concrete durability, Protective coatings, Weatherproofing, Marine atmospheres, Freeze thaw tests

50-2754

Assessment of deterioration in sea-side concrete bridges located in cold regions by in-situ tests on the surface layer of concrete.

Shoya, M., Tsukinaga, Y., Sugita, S., ACI International Conference on Evaluation and Rehabilitation of Concrete Structures and Innovations in Design, Hong Kong, Dec. 2-6, 1991. ACI publication SP-128. Vol.1. Edited by V.M. Malhotra, Detroit, American Concrete Institute, 1992, p.69-83, 3 refs.

Reinforced concretes, Concrete durability, Frost action, Frost weathering, Marine atmospheres, Bridges, Corrosion

50-2755

Pavement repairs with metallic glass fiber reinforced concrete: laboratory and field studies of durability.

Granju, J.L., Pigeon, M., Grandhaie, F., Banthia, N., ACI International Conference on Evaluation and Rehabilitation of Concrete Structures and Innovations in Design, Hong Kong, Dec. 2-6, 1991. ACI publication SP-128. Vol.1. Edited by V.M. Malhotra, Detroit, American Concrete Institute, 1992, p.161-182, 10 refs.

Concrete pavements, Reinforced concretes, Concrete placing, Concrete durability, Frost action, Frost weathering, Composite materials, Road maintenance

50-2756

Studies of shotcrete using ultra rapid hardening cement, steel fiber, and silica fume.

Masuda, Y., Uchida, Y., Tanaka, Y., ACI International Conference on Evaluation and Rehabilitation of Concrete Structures and Innovations in Design, Hong Kong, Dec. 2-6, 1991. ACI publication SP-128. Vol.1. Edited by V.M. Malhotra, Detroit, American Concrete Institute, 1992, p.201-215, 5 refs.

Reinforced concretes, Concrete admixtures, Cements, Concrete durability, Composite materials, Concrete strength, Concrete hardening, Frost resistance, Freeze thaw tests

50-2757

Use of a new glass-fiber rod as reinforcement for concrete structures.

Chaallal, O., Houde, J., Benmokrane, B., Aïtcin, P.C., ACI International Conference on Evaluation and Rehabilitation of Concrete Structures and Innovations in Design, Hong Kong, Dec. 2-6, 1991. ACI publication SP-128. Vol.1. Edited by V.M. Malhotra, Detroit, American Concrete Institute, 1992, p.515-528, 8 refs.

Reinforced concretes, Composite materials, Concrete durability, Concrete strength, Frost resistance, Freeze thaw tests, Weatherproofing

50-2758

Fine-grained slag sand and fly ash concrete with higher frost resistance and waterproofness.

Pavlenko, S.I., Rekhtin, I.V., ACI International Conference on Evaluation and Rehabilitation of Concrete Structures and Innovations in Design, Hong Kong, Dec. 2-6, 1991. ACI publication SP-128. Vol.1. Edited by V.M. Malhotra, Detroit, American Concrete Institute, 1992, p.559-575, 4 refs.

Concrete freezing, Concrete admixtures, Concrete durability, Concrete strength, Frost resistance, Frost protection, Freeze thaw tests, Waterproofing

50-2759

Characterization of mortars as surface repair materials.

Mirza, J., ACI International Conference on Evaluation and Rehabilitation of Concrete Structures and Innovations in Design, Hong Kong, Dec. 2-6, 1991. ACI publication SP-128. Vol.1. Edited by V.M. Malhotra, Detroit, American Concrete Institute, 1992, p.577-592, 6 refs.

Concrete admixtures, Mortars, Concrete durability, Concrete strength, Thermal stresses, Frost resistance, Freeze thaw tests

50-2760

Improvement of surface layer strength of concrete by using a special curing sheet.

Sugawara, T., Shoya, M., Saeki, N., ACI International Conference on Evaluation and Rehabilitation of Concrete Structures and Innovations in Design, Hong Kong, Dec. 2-6, 1991. ACI publication SP-128. Vol.1. Edited by V.M. Malhotra, Detroit, American Concrete Institute, 1992, p.625-636, 3 refs.

Winter concreting, Concrete durability, Concrete strength, Concrete curing, Air entrainment, Water cement ratio, Frost resistance, Frost protection, Freeze thaw tests

50-2761

Studies of methods to assess the quality of the surface layer of concrete.

Tsukinaga, Y., Shoya, M., Sugawara, T., ACI International Conference on Evaluation and Rehabilitation of Concrete Structures and Innovations in Design, Hong Kong, Dec. 2-6, 1991. ACI publication SP-128. Vol.1. Edited by V.M. Malhotra, Detroit, American Concrete Institute, 1992, p.637-651, 3 refs.

Concrete durability, Concrete strength, Frost action, Frost weathering, Frost resistance

50-2762

Experimental study on abrasion of various concretes due to ice movement.

Itoh, Y., Asai, Y., Saeki, H., ACI International Conference on Evaluation and Rehabilitation of Concrete Structures and Innovations in Design, Hong Kong, Dec. 2-6, 1991. ACI publication SP-128. Vol.2. Edited by V.M. Malhotra, Detroit, American Concrete Institute, 1992, p.839-850.

Concrete structures, Concrete strength, Offshore structures, Bridges, Piers, Ice solid interface, Ice loads, Ice friction, Abrasion

50-2763

Restoration of Kakabeka Falls, Ontario, Canada.

Grieve, R.G., Carter, T.G., Adamson, R.B., ACI International Conference on Evaluation and Rehabilitation of Concrete Structures and Innovations in Design, Hong Kong, Dec. 2-6, 1991. ACI publication SP-128. Vol.2. Edited by V.M. Malhotra, Detroit, American Concrete Institute, 1992, p.1225-1242, 3 refs.

Water erosion, Channel stabilization, Rock fills, Concrete durability, Concrete strength, Frost action, Frost shattering, Frost resistance, Frost protection, Freeze thaw tests

50-2764

Production of high-strength concrete for the Hibernia offshore concrete platform.

Hoff, G.C., Walum, R., Elimov, R., Woodhead, H.R., ACI International Conference on High-Performance Concrete, Singapore, 1994. ACI publication SP-149. Edited by V.M. Malhotra, Detroit, American Concrete Institute, 1994, p.37-62, 8 refs.

DLC TA439.H545 1994

Offshore structures, Offshore drilling, Precast concretes, Concrete strength, Icebergs, Ice solid interface, Ice loads, Ice control, Canada—Newfoundland—Grand Banks

50-2765

High-performance concrete incorporating large volumes of ASTM Class F fly ash.

Bilodeau, A., Malhotra, V.M., ACI International Conference on High-Performance Concrete, Singapore, 1994. ACI publication SP-149. Edited by V.M. Malhotra, Detroit, American Concrete Institute, 1994, p.177-193, 13 refs.

DLC TA439.H545 1994

Concrete admixtures, Concrete strength, Concrete durability, Frost resistance, Freeze thaw tests, Salting, Corrosion, Weatherproofing

50-2766

High-performance concrete: low-heat and high-strength.

Sakai, K., Watanabe, H., ACI International Conference on High-Performance Concrete, Singapore, 1994. ACI publication SP-149. Edited by V.M. Malhotra, Detroit, American Concrete Institute, 1994, p.243-268, 2 refs.

DLC TA439.H545 1994

Concrete admixtures, Winter concreting, Concrete curing, Concrete strength

50-2767

Mechanical and durability-related properties of high-strength concrete containing silica fume.

Torii, K., Kawamura, M., ACI International Conference on High-Performance Concrete, Singapore, 1994. ACI publication SP-149. Edited by V.M. Malhotra, Detroit, American Concrete Institute, 1994, p.461-474, 9 refs.

DLC TA439.H545 1994

Concrete admixtures, Concrete strength, Concrete durability, Frost resistance, Freeze thaw tests

50-2768

Freezing and thawing: comparison between non-air-entrained and air-entrained high-strength concrete.

Li, Y., Langan, B.W., Ward, M.A., ACI International Conference on High-Performance Concrete, Singapore, 1994. ACI publication SP-149. Edited by V.M. Malhotra, Detroit, American Concrete Institute, 1994, p.545-560, 10 refs.

DLC TA439.H545 1994

Concrete freezing, Concrete strength, Concrete durability, Concrete admixtures, Water cement ratio, Air entrainment, Frost resistance, Freeze thaw tests

50-2769

Studies on Holocene fluvial geomorphodynamics on the upper Oberweser. [Untersuchungen zur holozänen fluvialen Geomorphodynamik an der oberen Oberweser]

Thomas, J., *Göttinger geographische Abhandlungen*, 1993, No.98, 111p., In German. Refs. p.65-72.

DLC G1.G6 Heft 98

Geological surveys, Alluvium, Suspended sediments, Water erosion, Floodplains, Sediment transport, Stratigraphy, Geochronology, Paleoclimatology, Germany

50-2770

Geomorphological studies on the arid regions of northwest China, in particular, the Badain Jaran and Taklimakan deserts. [Geomorphologische Untersuchungen in Trockenräumen NW-Chinas unter besonderer Berücksichtigung von Badanjilin und Takelamagan]

Yang, X.P., *Göttinger geographische Abhandlungen*, 1991, No.96, 124p., In German with English, French, and Chinese summaries. Refs. p.114-124.

DLC G1.G6 Heft 96

Deserts, Topographic surveys, Soil surveys, Desert soils, Eolian soils, Lacustrine deposits, Cryogenic soils, Soil formation, Soil dating, Paleoclimatology, China—Badain Jaran Desert, China—Taklimakan Desert

50-2771

Permafrost and glaciers in Upper Engadin: Fundamentals and applications for automatic assessment and management. [Permafrost und Gletscher im Oberengadin: Grundlagen und Anwendungsbeispiele für automatisierte Schätzverfahren]

Hölzle, M., Contribution 132. Edited by D. Vischer, Zürich, Versuchanstalt für Wasserbau, Hydrologie und Glaziologie der Eidgenössischen Technischen Hochschule Zürich, 1994, 121p., In German with English summary. Refs. p.107-117.

Alpine landscapes, Mountain glaciers, Permafrost distribution, Air temperature, Snow temperature, Solar radiation, Albedo, Switzerland

50-2772

Retrieval of vertical profiles of liquid water and ice content in mixed clouds from Doppler radar and microwave radiometer measurements.

Sauvageot, H., *Journal of applied meteorology*, Jan. 1996, 35(1), p.14-23, 25 refs.

Cloud physics, Clouds (meteorology), Supercooled clouds, Microstructure, Remote sensing, Radar echoes, Radiometry, Water vapor, Water content, Ice crystal size, Particle size distribution, Profiles, Ice water interface, Analysis (mathematics)

50-2773

Numerical simulations of observed arctic stratus clouds using a second-order turbulence closure model.

Smith, W.S., Kao, C.Y.J., *Journal of applied meteorology*, Jan. 1996, 35(1), p.47-59, 25 refs.

Clouds (meteorology), Polar atmospheres, Cloud cover, Cloud physics, Atmospheric boundary layer, Marine meteorology, Turbulent exchange, Moisture transfer, Heat transfer, Profiles, Subsidence, Mathematical models, Simulation, Beaufort Sea

50-2774

Sputtering of water ice surfaces and the production of extended neutral atmospheres.

Shi, M., Baragiola, R.A., Grosjean, D.E., Johnson, R.E., Jurac, S., Schou, J., *Journal of geophysical research*, Dec. 25, 1995, 100(E12), p.26,387-26,395, 62 refs.

Extraterrestrial ice, Ice physics, Atmospheric physics, Satellites (natural), Radiation absorption, Ionization, Ice erosion, Ultraviolet radiation, Scattering, Temperature effects, Simulation

50-2775

Solar heating of the arctic mixed layer.

Maykut, G.A., McPhee, M.G., *Journal of geophysical research*, Dec. 15, 1995, 100(C12), p.24,691-24,703, 39 refs.

Climatology, Oceanography, Polar atmospheres, Atmospheric boundary layer, Insolation, Radiant heating, Ice cover thickness, Ice heat flux, Ice cover effect, Air ice water interaction, Thermodynamics, Arctic Ocean

50-2776

Barents Sea tidal and inertial motions from Argos ice buoys during the Coordinated Eastern Arctic Experiment.

Pease, C.H., Turet, P., Pritchard, R.S., *Journal of geophysical research*, Dec. 15, 1995, 100(C12), p.24,705-24,718, 22 refs.

Oceanography, Oceanographic surveys, Drift stations, Tidal currents, Sea ice distribution, Ice floes, Drift, Ice water interface, Oscillations, Periodic variations, Statistical analysis, Barents Sea

50-2777

Outflow of dense water from the Storfjord in Svalbard: a numerical model study.

Jungclaus, J.H., Backhaus, J.O., Fohrmann, H., *Journal of geophysical research*, Dec. 15, 1995, 100(C12), p.24,719-24,728, 31 refs.

Oceanography, Ocean currents, Water transport, Density (mass/volume), Gravity waves, Simulation, Mathematical models, Norway—Svalbard

50-2778

Seasonal and interannual changes in the North Atlantic subpolar gyre from Geosat and TOPEX/POSEIDON altimetry.

White, M.A., Heywood, K.J., *Journal of geophysical research*, Dec. 15, 1995, 100(C12), p.24,931-24,941, 24 refs.

Oceanography, Subpolar regions, Climatology, Ocean currents, Spacecraft, Remote sensing, Sea level, Height finding, Seasonal variations, Air water interactions, Atmospheric pressure, Wind factors

50-2779

High-resolution studies of solid CO in the Taurus dark cloud: characterizing the ices in quiescent clouds.

Chiar, J.E., Adamson, A.J., Kerr, T.H., Whittet, D.C.B., *Astrophysical journal*, Dec. 10, 1995, 455(1)pt.1, p.234-243, 55 refs.

Extraterrestrial ice, Cosmic dust, Ice spectroscopy, Ice detection, Spectra, Ice composition, Condensation, Ice vapor interface, Profiles

50-2780

High-density amorphous ice, the frost on interstellar grains.

Jenniskens, P., Blake, D.F., Wilson, M.A., Pohorille, A., *Astrophysical journal*, Dec. 10, 1995, 455(1)pt.1, p.389-401, 71 refs.

Extraterrestrial ice, Amorphous ice, Ice physics, Cosmic dust, Frost, Ice structure, Molecular structure, Ice formation, Ice density, Phase transformations, Electron microscopy, Simulation

50-2781

Three years across the Arctic: report on the Circumpolar Expedition Mapfre'92. [Tres años a través del Artico: el relato de la Expedición Circumpolar Mapfre'92]

De Larramendi, R.H., Martínez Peral, A., Olivera Marañón, M., Peche Acosta, R., 296p. + tables.

DLC G650.1990.E96

Expeditions, Cold weather operation

50-2782

Source gases: concentrations, emissions, and trends.

Fraser, P., Penkett, S., Harriss, R., Makide, Y., Sanhueza, E., Scientific assessment of ozone depletion: 1991 and World Meteorological Organization. Global Ozone Research and Monitoring Project, Report no.25. Edited by D.L. Albritton et al., Washington, D.C., London, UK, Nairobi, Kenya and Geneva, SZ, NASA, NOAA, Dept. of Environment, UN Environment Program, WMO, 1991, p.1.1-1.38, Refs. p.1.31-1.38.

DLC QC879.7.S25 1991

Ozone, Climatic changes, Atmospheric composition, Chemical composition, United States—Alaska, Antarctica—Showa Station, Antarctica—Amundsen-Scott Station, Antarctica—Mawson Station

Source gases are defined as those gases that influence levels of stratospheric ozone (O_3) by transporting species containing halogen, hydrogen, and nitrogen to the stratosphere that are important in O_3 destruction. Examples are the CFCs, methane (CH_4), and nitrous oxide (N_2O). Other source gases that also come under consideration in an atmospheric O_3 context are those that are involved in the O_3 or hydroxyl (OH) radical chemistry of the troposphere. Examples are CH_4, carbon monoxide and nonmethane hydrocarbons. Most of the source gases along with carbon dioxide and water vapor, are climatically significant and thus affect stratospheric O_3 levels by their influence on stratospheric temperatures. This chapter updates the previous reviews of trends and emissions of source gases, either from the context of their influence on atmospheric O_3 (WMO, 1986; 1990) or global climate change (IPCC, 1990). The current (1989) global abundances and concentration trends of the trace gases are given. Data are given for several antarctic stations.

50-2783

Ozone and temperature trends.

Stolarski, R., et al, Scientific assessment of ozone depletion: 1991 and World Meteorological Organization. Global Ozone Research and Monitoring Project, Report no.25. Edited by D.L. Albritton et al., Washington, D.C., London, UK, Nairobi, Kenya, and Geneva, SZ, NASA, NOAA, Dept of Environment, UN Environment Program, WMO, 1991, p.2.1-2.33, 68 refs.

DLC QC879.7.S25 1991

Stratosphere, Ozone, Temperature measurement, Atmospheric composition, Antarctica—Showa Station, —Macquarie Island

This chapter contains a review of progress since 1989 and 1990, including updating of the ozone records, in most cases through Mar. 1991. Also included are some new, unpublished reanalyses of these records including a complete reevaluation of 29 stations located in the former Soviet Union. The major new advance in knowledge of the measured ozone trend is the existence of independently calibrated satellite data records from the TOMS and SAGE instruments. This chapter compares the ozone records from many different instruments to determine whether or not they provide a consistent picture of the ozone change that has occurred in the atmosphere. Also briefly considered is the problem of stratospheric temperature change. Data from antarctic stations are cited.

50-2784

Heterogeneous processes: laboratory, field, and modeling studies.

Poole, L.R., Jones, R.L., Kurylo, M.J., Wahner, A., Scientific assessment of ozone depletion: 1991 and World Meteorological Organization. Global Ozone Research and Monitoring Project, Report no.25. Edited by D.L. Albritton et al., Washington, D.C., London, UK, Nairobi, Kenya, and Geneva, SZ, NASA, NOAA, Dept of Environment, UN Environment Program, WMO, 1991, p.3.1-3.17, 66 refs.

DLC QC879.7.S25 1991

Stratosphere, Models, Ozone, Clouds (meteorology), Atmospheric composition

This chapter contains a brief review of the current state of knowledge of heterogeneous processes in the stratosphere, emphasizing those results obtained since WMO (1990). Sections are included on laboratory investigations of heterogeneous reactions, the characteristics and climatology of PSCs, stratospheric sulfate aerosols, and evidence of heterogeneous chemical processing. Antarctic PSC data are cited.

50-2785

Stratospheric processes: observations and interpretation.

Brune, W.H., et al, Scientific assessment of ozone depletion: 1991 and World Meteorological Organization. Global Ozone Research and Monitoring Project, Report no.25. Edited by D.L. Albritton et al., Washington, D.C., London, UK, Nairobi, Kenya, and Geneva, SZ, NASA, NOAA, Dept of Environment, UN Environment Program, WMO, 1991, p.4.1-4.20, Refs. p.4.16-4.20.

DLC QC879.7.S25 1991

Stratosphere, Ozone, Chemical composition, Atmospheric composition

The goal of this chapter is to describe the causes for the observed ozone trends as they are currently understood. At present, researchers understand with considerable confidence the stratospheric processes responsible for the antarctic ozone hole but are only beginning to understand the causes of the ozone trends at middle latitudes. Even though the causes of the latter have not been clearly determined, it is likely that they, just as those over Antarctica, involve chlorine and bromine chemistry that has been enhanced by heterogeneous processes. This chapter generally presents only an update of the discussions and observations that have occurred for stratospheric processes since the last assessment (WMO, 1990), and is not a complete review of all the new information about stratospheric processes. It begins with an update of the previous assessment of polar stratospheres (WMO, 1990), followed by a discussion on the possible causes for the ozone trends at middle latitudes and on the effects of bromine and of volcanoes.

50-2786

Radiative forcing of climate.

Ramaswamy, V., Leovy, C., Rodhe, H., Shine, K., Wang, W.C., Wuebbles, D., Scientific assessment of ozone depletion: 1991 and World Meteorological Organization. Global Ozone Research and Monitoring Project, Report no.25. Edited by D.L. Albritton et al., Washington, D.C., London, UK, Nairobi, Kenya, and Geneva, SZ, NASA, NOAA, Dept of Environment, UN Environment Program, WMO, 1991, p.7.1-7.28, 47 refs.

DLC QC879.7.S25 1991

Climatic changes, Atmospheric composition, Chemical composition, Ozone, Models, Stratosphere, Clouds (meteorology)

This chapter is an update of the scientific discussions presented in Chapter 2 of the Intergovernmental Panel on Climate Change report (IPCC, 1990) concerning the atmospheric radiative and chemical species of significance for climate change. There are two major objectives of the present update. The first is an extension of the discussion on the Global Warming Potentials (GWPs), including a reevaluation in view of the updates in the lifetimes of the radiatively active species. The second important objective is to underscore major developments in the radiative forcing of climate due to the observed stratospheric ozone losses occurring between 1979 and 1990. Model results for both polar regions are given.

50-2787

Future chlorine-bromine loading and ozone depletion.

Prather, M.J., Sasaki, T., Ibrahim, A.M., Stordal, F., Visconti, G., Scientific assessment of ozone depletion: 1991 and World Meteorological Organization. Global Ozone Research and Monitoring Project, Report no.25. Edited by D.L. Albritton et al., Washington, D.C., London, UK, Nairobi, Kenya, and Geneva, SZ, NASA, NOAA, Dept of Environment, UN Environment Program, WMO, 1991, p.8.1-8.48, 41 refs.

DLC QC879.7.S25 1991

Stratosphere, Models, Ozone, Atmospheric composition

Stratospheric ozone is the focus of this assessment, and this chapter reports predictions of ozone changes using the best global two-dimensional models of stratospheric chemistry and transport currently in use within the international scientific community. These models are not three-dimensional and thus cannot include the full range of dynamical coupling, i.e., between the large antarctic ozone losses and the circulation itself. Results presented here are, however, a significant step beyond those reported in previous United Nations Environmenta Program-World Meteorological Organization assessments. The models now incorporate heterogeneous chemical reactions expected to occur on the ubiquitous stratospheric sulfate layer, and some models have included a parametric formulation of the chemistry involving PSCs. Calculations are shown for the past decade and into the next century. The authors examined not only perturbations to column ozone (and hence solar ultraviolet at the ground), but also changes in local ozone concentrations and in key species that drive stratospheric chemistry. (Auth. mod.)

50-2788

Ultraviolet radiation changes.

McKenzie, R.L., Ilyas, M., Frederick, J.E., Filiushkin, V., Scientific assessment of ozone depletion: 1991 and World Meteorological Organization. Global Ozone Research and Monitoring Project, Report no.25. Edited by D.L. Albritton et al., Washington, D.C., London, UK, Nairobi, Kenya, and Geneva, SZ, NASA, NOAA, Dept of Environment, UN Environment Program, WMO, 1991, p.11.1-11.14, 26 refs.

DLC QC879.7.S25 1991

Ultraviolet radiation, Ozone, Antarctica—McMurdo Station, Antarctica—Palmer Station, Antarctica—Amundsen-Scott Station

A major consequence of ozone depletion is an increase in solar ultraviolet (UV) radiation received at the Earth's surface. This chapter discusses advances that have been made since the previous assessment (WMO, 1990) to the understanding of UV radiation. The impacts of these changes in UV on the biosphere are not included, because they are discussed in the effects assessment (UNEP, 1991). The major conclusions are: a significantly improved UV database and findings that biologically damaging UV has more than doubled in Antarctica; an erythemal RAF of 1.25 has been calculated; a discrepancy is found in observed UV trends between RB network and TOMS; increased high latitude SH erythemally active UV. Increases in UV effects will appear first in the SH and be more severe, and existing chemical models for ozone are unreliable.

50-2789

Jeeps along the Fjöllum River: handbook of highland travel. [Jeppar á fjöllum: handbók hálendisfarans]

Gíslason, G.M., ed, Seltjarnarnes, Iceland, Ormstunga, 1994, 480p., In Icelandic.

DLC TL235.7.G57 1994

Motor vehicles, All terrain vehicles, Traverses, Cold weather operation, Cold weather performance, Iceland

50-2790

On periglacial deformations in an excavation at the margin of the Fuhse Valley near Salzgitter-Lebenstedt. [Über periglaziale Verformungen in Grabungsaufschlüssen am Rande des Fuhsetales bei Salzgitter-Lebenstedt]

Preul, F., *Geologisches Jahrbuch. Reihe A*, 1985, No.87, 34p., In German with English and Russian summaries. 10 refs.

DLC QE269.G38 Heft 87

Geological surveys, Topographic surveys, Periglacial processes, Geomorphology, Paleoclimatology, Germany

50-2791

Investigation of the impact of snow removal activities on pavement markings in Virginia.

Cottrell, B.H., Jr., *Virginia Transportation Research Council. Report*, Sep. 1995, VTRC 96-R3, 27p., 12 refs.

Snow removal, Road maintenance, Highway planning, Safety, Markers, Cost analysis, United States—Virginia

50-2792

Evaluation of cold mixes for winter pothole repair.

Prowell, B.D., Franklin, A.G., *Virginia Transportation Research Council. Report*, Nov. 1995, VTRC 96-R9, 39p., 12 refs.

Pavements, Bitumens, Road maintenance, Cold weather performance, Cost analysis, United States—Virginia

50-2793

Frozen soil barrier technology.

Oak Ridge National Laboratory. Hazardous Waste Remedial Actions Program (HAZWRAP), Oak Ridge, TN, U.S. Department of Energy, Office of Environmental Management, Apr. 1995, 11p. + appends., 5 refs.

Soil freezing, Artificial freezing, Soil stabilization, Earth fills, Radioactive wastes, Waste disposal, Underground storage, Cold storage

50-2794

Setting verification targets for minimum road temperature forecasts.

Halsey, N.G.J., *Meteorological applications*, Sep. 1995, 2(3), p.193-197, 3 refs.

Road icing, Frost forecasting, Weather forecasting, Road maintenance

50-2795

Automated measurements of snow temperature profiles in the Cairngorm mountains, Scotland.

Purves, R.S., Barton, J.S., Wright, D.S.B., *Meteorological applications*, Sep. 1995, 2(3), p.199-207, 12 refs.

Snow surveys, Snow temperature, Snow stratigraphy, Snow cover stability, Monitors, Warning systems, Data transmission, Avalanche forecasting, United Kingdom—Scotland

50-2796

Extreme warm frontal icing on 25 February 1994 causes an aircraft accident near Uttoxeter.

Pike, W.S., *Meteorological applications*, Sep. 1995, 2(3), p.273-279, 4 refs.

Aircraft icing, Ice storms, Ice loads, Fronts (meteorology), Accidents, United Kingdom—England

50-2797

Frost and deicing salt resistance of concrete pavements: correlation and comparison between the CDF and slab tests. [Frost-Tausalz-Widerstand von Betonpflastersteinen: Korrelation und Vergleich zwischen dem CDF Test und dem Slab Test]

Setzer, M.J., Auberg, R., *Essen. Universität-Gesamthochschule. Fachbereich Bauwesen. Forschungsbericht (University of Essen. Department of Construction Engineering. Research report)*, Aug. 1994, No.56, 59p., In German. 12 refs.

Concrete pavements, Concrete durability, Concrete strength, Concrete freezing, Frost resistance, Freeze thaw tests, Salting, Corrosion, Road maintenance

50-2798

Modeling winter storms over Arizona. Final report—Volume I.

Matthews, D.A., Medina, J.G., *U.S. Bureau of Reclamation. Technical Service Center, Denver, CO. Report*, Sep. 1995, R-95-11 (Vol.1), 85p., PB96 106752, 50 refs. Prepared for the Arizona Department of Water Resources.

Snowstorms, Snowfall, Artificial snow, Snow manufacturing, Cloud physics, Cloud seeding, Weather modification, Computerized simulation, United States—Arizona

50-2799

Modeling winter storms over Arizona. Final report—Volume II, Appendix A: Users guide for the Arizona Airflow and Microphysics Model.

Matthews, D.A., *U.S. Bureau of Reclamation. Technical Service Center, Denver, CO. Report*, Sep. 1995, R-95-11 (Vol.2), 73p., PB96 106745, 31 refs. Prepared for the Arizona Department of Water Resources.

Snowstorms, Snowfall, Artificial snow, Snow manufacturing, Cloud physics, Cloud seeding, Weather modification, Computer programs, United States—Arizona

50-2800

Modeling winter storms over Arizona. Final report—Volume III, Appendix B: Estimation of winter precipitation on the Mogollon Rim with a simple local-scale model.

Medina, J.G., *U.S. Bureau of Reclamation. Technical Service Center, Denver, CO. Report*, Sep. 1995, R-95-11 (Vol.3), 15p., PB96 106968, 2 refs. Prepared for the Arizona Department of Water Resources.

Snowstorms, Snowfall, Artificial snow, Snow manufacturing, Cloud physics, Cloud seeding, Weather modification, Computer programs, United States—Arizona

50-2801

Predicting the progression of D-cracking.

Janssen, D.J., Dempsey, B.J., DuBose, J.B., Patel, A.J., Illinois Cooperative Highway and Transportation Series. Civil Engineer Series. Report FHWA/IL/UI-211 and University of Illinois. Department of Civil Engineering. Final report. No.UILU-ENG-86-2005, Springfield, Illinois Department of Transportation, 196p., PB86 246022, 33 refs.

Concrete pavements, Concrete durability, Cracking (fracturing), Forecasting, Frost action, Freeze thaw cycles, Protection, Sealing, Bituminous concretes, Computerized simulation

50-2802

Relation between permeability and pore size distribution of compacted clayey silts.

Garcia-Bengochea, I., Purdue University. Joint Highway Research Project. Interim report. No.JHRP-78-4, West Lafayette, Indiana State Highway Commission, Apr. 1978, 179p., PB 291-982, 77 refs.

Engineering geology, Soil mechanics, Soil compaction, Clay soils, Soil tests, Permeability, Porosity, Soil structure, Freeze drying, Desiccation

50-2803

Ecological controls on methane emissions from a northern peatland complex in the zone of discontinuous permafrost, Manitoba, Canada.

Bubier, J.L., Moore, T.R., Bellisario, L., Comer, N.T., Crill, P.M., *Global biogeochemical cycles*, Dec. 1995, 9(4), p.455-470, 43 refs.

Climatology, Wetlands, Peat, Atmospheric composition, Plant ecology, Discontinuous permafrost, Permafrost weathering, Natural gas, Vapor transfer, Soil air interface, Sampling, Geochemical cycles, Canada—Manitoba

50-2804

Isotopic climatic records in the Alleröd-Bølling-Younger Dryas and post-Younger Dryas events.

Epstein, S., *Global biogeochemical cycles*, Dec. 1995, 9(4), p.557-563, 13 refs.

Paleoclimatology, Climatic changes, Pleistocene, Paleoecology, Ice sheets, Ice cores, Isotope analysis, Sedimentation, Correlation, Greenland

50-2805

Basal ice facies and their formation in the western Alps.

Hubbard, B., Sharp, M., *Arctic and alpine research*, Nov. 1995, 27(4), p.301-310, 48 refs.

Mountain glaciers, Alpine glaciation, Glacier surveys, Glacial geology, Subglacial drainage, Glacier beds, Bottom ice, Stratification, Regelation, Ice solid interface, Ice composition, Sedimentation, Isotope analysis, Switzerland—Alps

50-2806

Holocene glacial chronology in Patagonia: Tyndall and Upsala glaciers.

Aniya, M., *Arctic and alpine research*, Nov. 1995, 27(4), p.311-322, 32 refs.

Geomorphology, Landforms, Glacial geology, Geochronology, Glacier oscillation, Moraines, Quaternary deposits, Sampling, Radioactive age determination, Correlation, Chile—Patagonia

50-2807

Active layer changes (1986 to 1993) following the forest-tundra fire near Inuvik, N.W.T., Canada.

Mackay, J.R., *Arctic and alpine research*, Nov. 1995, 27(4), p.323-336, 61 refs.

Forest ecosystems, Active layer, Permafrost hydrology, Permafrost transformation, Thaw depth, Thaw weakening, Tundra vegetation, Fires, Environmental impact, Revegetation, Snow cover effect, Canada—Northwest Territories—Inuvik

50-2808

Implications of frost heave for patterned ground, Tibet Plateau, China.

Wang, B.L., French, H.M., *Arctic and alpine research*, Nov. 1995, 27(4), p.337-344, 34 refs.

Geocryology, Geomorphology, Landforms, Tundra terrain, Periglacial processes, Patterned ground, Frost heave, Active layer, Soil water, Convection, Frozen ground mechanics, Drill core analysis, China—Tibet

50-2809

Assessment of rock glacier sliding using seventeen years of velocity data: Nautárdalur rock glacier, north Iceland.

Whalley, W.B., Palmer, C.F., Hamilton, S.J., Martin, H.E., *Arctic and alpine research*, Nov. 1995, 27(4), p.345-351, 31 refs.

Rock glaciers, Glacial geology, Sliding, Velocity measurement, Profiles, Periodic variations, Fossil ice, Ice creep, Iceland

50-2810

Late Quaternary paleoceanography of the mid- to outer continental shelf, East Greenland.

Williams, K.M., Andrews, J.T., Weiner, N.J., Mudie, P.J., *Arctic and alpine research*, Nov. 1995, 27(4), p.352-363, 56 refs.

Oceanography, Paleoclimatology, Pleistocene, Quaternary deposits, Marine deposits, Sedimentation, Bottom sediment, Drill core analysis, Palynology, Radioactive age determination, Periodic variations, Greenland

50-2811

Thermal environments of arctic soil organisms during winter.

Coulson, S.J., et al, *Arctic and alpine research*, Nov. 1995, 27(4), p.364-370, 36 refs.

Soil microbiology, Ecology, Microclimatology, Cold weather survival, Arctic landscapes, Subarctic landscapes, Air temperature, Soil temperature, Thermal regime, Snow cover effect, Insulation

50-2812

Co-occurrence and microhabitat distribution of six *Nebria* species (Coleoptera: Carabidae) in an alpine glacier retreat zone in the Alps, Austria.

Gereben, B.A., *Arctic and alpine research*, Nov. 1995, 27(4), p.371-379, 50 refs.

Alpine landscapes, Ecology, Microclimatology, Biomass, Sampling, Biogeography, Classifications, Moraines, Austria—Alps

50-2813

Spectral quality and absorption of solar radiation in a mountain birch forest, Abisko, Sweden.

Ovhed, M., Holmgren, B., *Arctic and alpine research*, Nov. 1995, 27(4), p.380-388, 23 refs.

Forest canopy, Alpine landscapes, Solar radiation, Radiation balance, Microclimatology, Photometry, Spectra, Radiation absorption, Plant tissues, Optical properties, Photosynthesis, Sweden—Abisko

50-2814

Sierra Nevada, California, U.S.A., snow algae: snow albedo changes, algal-bacterial interrelationships, and ultraviolet radiation effects.

Thomas, W.H., Duval, B., *Arctic and alpine research*, Nov. 1995, 27(4), p.389-399, 53 refs.

Snow composition, Alpine landscapes, Colored snow, Albedo, Microbiology, Algae, Photosynthesis, Bacteria, Ecology, Solar radiation, Ultraviolet radiation, Radiation absorption, Light effects, Biomass, Correlation, United States—California—Sierra Nevada

50-2815

Lichens of alpine meadows on the Beartooth Plateau, Montana and Wyoming, U.S.A.

Eversman, S., *Arctic and alpine research*, Nov. 1995, 27(4), p.400-406, 38 refs.

Alpine landscapes, Meadow soils, Soil microbiology, Lichens, Classifications, Distribution, Plant ecology, Vegetation patterns, Snow cover effect, United States—Montana, United States—Wyoming

50-2816

Germination ecology of some common forest herbs in Yellowstone National Park, Wyoming, U.S.A.

Romme, W.H., Bohland, L., Persichetty, C., Caruso, T., *Arctic and alpine research*, Nov. 1995, 27(4), p.407-412, 22 refs.

Forest ecosystems, Plant ecology, Revegetation, Vegetation patterns, Growth, Viability, Sampling, Seasonal variations, United States—Wyoming—Yellowstone National Park

50-2817

New geography of the polar regions: synthesis and perspectives. [Verso una nuova geografia delle terre polari: sintesi e prospettive]

Orombelli, G., ed, Smiraglia, C., ed, Terranova, R., ed, Atti del Convegno della Società Geografica Italiana, Roma, 21-22 Novembre 1991 (Proceedings of the Italian Geographical Society Conference, Rome, 21-22 November 1991), *Società Geografica Italiana, Rome. Memorie*, 1994, Vol.51, 317p., In Italian with English summaries. Refs. passim. For individual papers see A-54331 through A-54335, A-54338, E-54340, E-54341, E-54343, F-54339, J-54342, J-54344, M-54336, M-54337 or 50-2818 through 50-2825.

DLC G17.S69

Marine geology, Ice cores, Low temperature research, Mining, Glaciology, Research projects, Oceanography, Antarctica

This volume is a collection of papers presented at the conference held by the Italian Geographical Society in Rome, Italy, Nov. 21-22, 1991. Most papers, contributed by Italian investigators, are of general geographic interest, and are grouped in three sections: The poles, general problems and comparisons; the Arctic; and Antarctica.

50-2818

North Sea and Norwegian Sea hydrocarbon exploration. [La ricerca petrolifera nel Mare del Nord e nel Mare di Norvegia. Aspetti geografici e problematiche di ricerca]

Alberti Di Catenaja, C., Rivanera, E., *Società Geografica Italiana, Rome. Memorie,* 1994, Vol.51, Verso una nuova geografia delle terre polari: sintesi e prospettive. Atti del Convegno della Società Geografica Italiana, Roma, 21-22 Novembre 1991 (A new geography of the polar regions: synthesis and perspectives. Italian Geographical Society Conference, Rome, 21-22 November 1991. Proceedings). Edited by G. Orombelli, C. Smiraglia, and R. Terranova, p.81-96, In Italian with English summary. 9 refs.

DLC G17.S69

Marine geology, Hydrocarbons, Crude oil, Exploration, Low temperature research, Petroleum industry, North Sea, Norwegian Sea

50-2819

At the edge of the Arctic: Greenland and Jameson Land. Environment and research. [Ai confini dell'Artico: Groenlandia e Jameson Land. Ambiente e ricerca]

Di Cesare, F., Papetti, I., *Società Geografica Italiana, Rome. Memorie,* 1994, Vol.51, Verso una nuova geografia delle terre polari: sintesi e prospettive. Atti del Convegno della Società Geografica Italiana, Roma, 21-22 Novembre 1991 (A new geography of the polar regions: synthesis and perspectives. Italian Geographical Society Conference, Rome, 21-22 November 1991. Proceedings). Edited by G. Orombelli, C. Smiraglia, and R. Terranova, p.97-116, In Italian with English summary.

DLC G17.S69

Petroleum industry, Crude oil, Petroleum transportation, Ecology, Glaciology, Permafrost, Sea ice distribution, Economics, Greenland

50-2820

Geology and mining in Svalbard. [Aspetti geologici e minerari delle Isole Svalbard]

Cippitelli, G., *Società Geografica Italiana, Rome. Memorie,* 1994, Vol.51, Verso una nuova geografia delle terre polari: sintesi e prospettive. Atti del Convegno della Società Geografica Italiana, Roma, 21-22 Novembre 1991 (A new geography of the polar regions: synthesis and perspectives. Italian Geographical Society Conference, Rome, 21-22 November 1991. Proceedings). Edited by G. Orombelli, C. Smiraglia, and R. Terranova, p.117-134, In Italian with English summary. Refs. p.132-133.

DLC G17.S69

Geological surveys, Mining, Glacial deposits, Coal, Crude oil, Glaciology, Hydrocarbons, Norway—Svalbard

50-2821

Greenland Ice-Core Project (GRIP): three years of activity. [Greenland Ice-Core Project (GRIP): tre anni di attivitá]

Maggi, V., Corazza, E., *Società Geografica Italiana, Rome. Memorie,* 1994, Vol.51, Verso una nuova geografia delle terre polari: sintesi e prospettive. Atti del Convegno della Società Geografica Italiana, Roma, 21-22 Novembre 1991 (A new geography of the polar regions: synthesis and perspectives. Italian Geographical Society Conference, Rome, 21-22 November 1991. Proceedings). Edited by G. Orombelli, C. Smiraglia, and R. Terranova, p.135-156, In Italian with English summary. Refs. p.153-155.

DLC G17.S69

Research projects, Low temperature research, Ice cores, Coring, Paleoclimatology, Greenland

50-2822

General geomorphological aspects of the Cumberland Peninsula on Baffin I. [Aspetti geomorfologici generali della Cumberland Peninsula nell'Isola di Baffin, (Arcipelago Artico Canadese)]

Cortemiglia, G.C., Terranova, R., *Società Geografica Italiana, Rome. Memorie,* 1994, Vol.51, Verso una nuova geografia delle terre polari: sintesi e prospettive. Atti del Convegno della Società Geografica Italiana, Roma, 21-22 Novembre 1991 (A new geography of the polar regions: synthesis and perspectives. Italian Geographical Society Conference, Rome, 21-22 November 1991. Proceedings). Edited by G. Orombelli, C. Smiraglia, and R. Terranova, p.157-160 + tables, In Italian with English summary. 17 refs.

DLC G17.S69

Geomorphology, Glacial erosion, Glacier flow, Pleistocene, Canada—Northwest Territories—Baffin Island

50-2823

National Antarctic Research Program. [Il Programma Nazionale di Ricerche in Antartide]

Cervellati, R., *Società Geografica Italiana, Rome. Memorie,* 1994, Vol.51, Verso una nuova geografia delle terre polari: sintesi e prospettive. Atti del Convegno della Società Geografica Italiana, Roma, 21-22 Novembre 1991 (A new geography of the polar regions: synthesis and perspectives. Italian Geographical Society Conference, Rome, 21-22 November 1991. Proceedings). Edited by G. Orombelli, C. Smiraglia, and R. Terranova, p.173-184 + tables, In Italian with English summary.

DLC G17.S69

Research projects, Low temperature research, Expeditions, Glaciology, Antarctica—Terra Nova Bay Station

After some preliminary information on the Antarctic Treaty and on SCAR, a presentation is given of the Italian program, set up under the law of June 10, 1985. The main achievements of this program are described, particularly the seven expeditions performed between 1985-86 and 1991-92, the permanent base at Terra Nova Bay in North Victoria Land, and the first scientific results worthy of note in various areas of research. (Auth.)

50-2824

Dynamics of David Glacier and its floating Drygalski Ice Tongue. [La dinamica del ghiacciaio di sbocco David e della sua lingua galleggiante Drygalski (Terra Vittoria, Antartide)]

Frezzotti, M., *Società Geografica Italiana, Rome. Memorie,* 1994, Vol.51, Verso una nuova geografia delle terre polari: sintesi e prospettive. Atti del Convegno della Società Geografica Italiana, Roma, 21-22 Novembre 1991 (A new geography of the polar regions: synthesis and perspectives. Italian Geographical Society Conference, Rome, 21-22 November 1991. Proceedings). Edited by G. Orombelli, C. Smiraglia, and R. Terranova, p.247-259, In Italian with English summary. Refs. p.256-258.

DLC G17.S69

Glaciers, Glacier tongues, Topographic surveys, Spaceborne photography, Flow rate, Variations, Icebergs, Antarctica—Drygalski Ice Tongue, Antarctica—David Glacier

David Glacier is the largest outlet glacier of northern Victoria Land, which drains a part of the East Antarctic Ice Sheet (224,000 km^2). The glacier terminates in Terra Nova Bay, forming an ice tongue called Drygalski, measuring about 92 km in length in 1990. The analysis of historical documents (maps, sketches and data), aerial photographs (TMA) and of satellite images (Landsat MSS and TM) allows an evaluation of ice cliff variation of the Drygalski Ice Tongue during the 20th century. The evolution is characterized by a steady increase of the ice tongue length from 1902 to 1990. Between Dec. 1956 and Dec. 1957 the most important iceberg calving of this century occurred, with a reduction of the Drygalski Ice Tongue by some 40%, from about 110 km to about 68 km. Analysis and comparison of different satellite images, taken at intervals of several years, has allowed the assessment of the variation in size, the velocities and the spreading of David Glacier and Drygalski Ice Tongue. (Auth. mod.)

50-2825

Moraines and other formations with buried ice in the Terra Nova Bay area. [Morene e altre forme con ghiaccio sepolto nella regione di Baia Terra Nova (Antartide)]

Meneghel, M., Orombelli, G., Smiraglia, C., *Società Geografica Italiana, Rome. Memorie,* 1994, Vol.51, Verso una nuova geografia delle terre polari: sintesi e prospettive. Atti del Convegno della Società Geografica Italiana, Roma, 21-22 Novembre 1991 (A new geography of the polar regions: synthesis and perspectives. Italian Geographical Society Conference, Rome, 21-22 November 1991. Proceedings). Edited by G. Orombelli, C. Smiraglia, and R. Terranova, p.261-275, In Italian with English summary. Refs. p.273-274.

DLC G17.S69

Glacial geology, Geomorphology, Glacial deposits, Moraines, Topographic surveys, Rock glaciers, Antarctica—Terra Nova Bay

In the area of Terra Nova Bay, various landforms linked to buried ice have been identified. Bearing in mind their geomorphological features, the relationships with the surrounding forms and with present glaciers, topography, types of ice and of the covering debris, these forms have been classified as rock glaciers, debris-covered glaciers, ice-cored drifts, and stagnant and ice-cored moraines. (Auth.)

50-2826

Behavior of vehicles driven in blowing snow.

Fukuzawa, Y., Ishimoto, K., *Kaihatsu doboku kenkyujo geppo (Civil Engineering Research Institute. Monthly report),* Dec. 1994, No.499, p.12-22, In Japanese with English summary. 4 refs.

Road icing, Blowing snow, Motor vehicles, Visibility, Safety, Highway planning

50-2827

Analysis of winter skid accidents in Sapporo City.

Nagai, T., Takagi, H., Onuma, H., *Kaihatsu doboku kenkyujo geppo (Civil Engineering Research Institute. Monthly report),* Dec. 1994, No.499, p.23-35, In Japanese with English summary. 6 refs.

Road icing, Tires, Skid resistance, Rubber ice friction, Safety, Accidents, Highway planning, Japan—Hokkaido

50-2828

Survey on the impact of deicing chemicals on plants—current conditions along National Highway 230.

Miyamoto, S., Takagi, H., Onuma, H., *Kaihatsu doboku kenkyujo geppo (Civil Engineering Research Institute. Monthly report),* Nov. 1994, No.498, p.10-19, In Japanese with English summary. 24 refs.

Road icing, Chemical ice prevention, Salting, Road maintenance, Soil pollution, Plant physiology, Physiological effects, Environmental impact, Japan—Hokkaido

50-2829

Effects of widespread use of studless tire on traffic conditions.

Horita, N., Takagi, H., Onuma, H., *Kaihatsu doboku kenkyujo geppo (Civil Engineering Research Institute. Monthly report),* Nov. 1994, No.498, p.20-28, In Japanese with English summary. 8 refs.

Road icing, Road maintenance, Highway planning, Tires, Rubber ice friction, Accidents, Safety, Environmental protection, Legislation, Japan—Hokkaido

50-2830

On-site research on the performance of fine and gap-graded asphalt concrete with various mixing proportions of coarse aggregates.

Abe, A., Ogasawara, A., Takeda, Y., *Kaihatsu doboku kenkyujo geppo (Civil Engineering Research Institute. Monthly report),* Oct. 1994, No.497, p.19-29, In Japanese with English summary. 5 refs.

Road icing, Bituminous concretes, Concrete pavements, Concrete aggregates, Skid resistance, Road maintenance, Japan—Hokkaido

50-2831

What is an ice boom.

Hokkaido Civil Engineering Research Institute. Fisheries Civil Engineering Laboratory (Suisan doboku kenkyushitsu), *Kaihatsu doboku kenkyujo geppo (Civil Engineering Research Institute. Monthly report),* Oct. 1994, No.497, p.30-35, In Japanese with English title only. 4 refs.

Sea ice distribution, Ice conditions, Ice control, Ice booms, Okhotsk Sea

50-2832

Research on cold region river.

Yamashita, S., *Kaihatsu doboku kenkyujo geppo (Civil Engineering Research Institute. Monthly report),* Sep. 1994, No.496, p.2-9, In Japanese with English summary. 12 refs.

River ice, Frazil ice, Ice formation, Ice conditions, Ice cover effect, River flow, Japan—Hokkaido

50-2833

Using antiskid materials as road icing countermeasures. [Toketsu romen taisaku toshite no suberidome zai no riyo ni tsuite]

Miyamoto, S., Takagi, H., Mima, M., *Kaihatsu doboku kenkyujo geppo (Civil Engineering Research Institute. Monthly report),* Sep. 1994, No.496, p.38-42, In Japanese. 10 refs.

Road icing, Sanding, Skid resistance, Road maintenance, Japan—Hokkaido

50-2834

Frost resistance of surface-coated concrete.

Takahashi, J., Sakai, K., Kumagai, M., Sato, T., *Kaihatsu doboku kenkyujo geppo (Civil Engineering Research Institute. Monthly report),* Aug. 1994, No.495, p.13-24, In Japanese with English summary. 3 refs.

Concrete freezing, Concrete durability, Frost action, Frost resistance, Frost protection, Freeze thaw tests, Protective coatings, Waterproofing

50-2835

Assessment of the design load of bridge piers constructed in rivers freezing over in winter.

Yamauchi, T., Ono, Y., Hara, F., Sato, M., *Kaihatsu doboku kenkyujo geppo (Civil Engineering Research Institute. Monthly report),* July 1994, No.494, p.2-10, In Japanese with English summary. 16 refs.

Bridges, Piers, River ice, Ice solid interface, Ice loads, Ice pressure, Ice friction, Japan—Hokkaido

50-2836

Basic study of pyroclastic flow on a snow-covered slope.

Miura, A., Shimizu, Y., Shimokura, H., *Kaihatsu doboku kenkyujo geppo (Civil Engineering Research Institute. Monthly report),* Apr. 1994, No.491, p.23-31, In Japanese with English summary. 5 refs.

Snow hydrology, Snowmelt, Snow cover effect, Slope processes, Volcanic ash, Mudflows

50-2837

Evaluation of the visibility of new style snow poles considering their esthetics. [Keikan o koryo shita shingata sunoporu no shininsei no hyoka ni tsuite]

Hirasawa, H., Takagi, H., Nagai, T., *Kaihatsu doboku kenkyujo geppo (Civil Engineering Research Institute. Monthly report),* Apr. 1994, No.491, p.63-72, In Japanese. 2 refs.

Blowing snow, Visibility, Safety, Markers, Road maintenance, Highway planning, Japan—Hokkaido

50-2838

Development of road traffic information system responsive to driver telephone requests.

Horikawa, T., Takagi, H., Onuma, H., *Kaihatsu doboku kenkyujo geppo (Civil Engineering Research Institute. Monthly report),* Nov. 1993, No.486, p.48-59, In Japanese with English summary. 16 refs.

Road icing, Frost forecasting, Weather forecasting, Safety, Warning systems, Radio communication, Data transmission, Road maintenance, Japan—Hokkaido

50-2839

Characteristics of earthquake resistant supports in low-temperature regions. [Teion iki ni okeru menshin shisho no tokusei ni tsuite]

Sato, M., Nishi, H., *Kaihatsu doboku kenkyujo geppo (Civil Engineering Research Institute. Monthly report),* Oct. 1993, No.485, p.51-57, In Japanese. 5 refs.

Bridges, Supports, Joints (junctions), Rubber, Frost resistance, Freeze thaw tests, Cold weather tests, Earthquakes, Damping

50-2840

Warning bells of slippery roads. [Tsurutsuru romen e no keisho]

Takagi, H., *Kaihatsu doboku kenkyujo geppo (Civil Engineering Research Institute. Monthly report),* Oct. 1993, No.485, p.58-63, In Japanese. 4 refs.

Road icing, Tires, Skid resistance, Rubber ice friction, Warning systems, Road maintenance

50-2841

Results of black ice inhibiting filler use on asphalt test sections. [Erfahrungen mit einem glättebildungshemmenden Füller]

Arand, W., *Straße + Autobahn,* Dec. 1995, 46(1), p.696-707, In German. 11 refs.

Bituminous concretes, Road icing, Winter maintenance, Chemical ice prevention, Ice control, Solutions, Surface structure, Microstructure, Scanning electron microscopy, Temperature effects

50-2842

Water relations in lichens at subzero temperatures: structural changes and carbon dioxide exchange in the lichen *Umbilicaria aprina* from continental Antarctica.

Schroeter, B., Scheidegger, C., *New phytologist,* Oct. 1995, 131(2), p.273-285, 53 refs.

Plants (botany), Lichens, Freeze thaw cycles, Moisture transfer, Plant ecology, Photosynthesis, Carbon dioxide, Frost resistance, Temperature effects, Scanning electron microscopy, Snow cover effect, Thermal analysis, Antarctica—Granite Harbor, Antarctica—Botany Bay

Carbon dioxide gas exchange measurements in lichens revealed that net photosynthesis and dark respiration occurred at subzero temperatures regardless of whether a lichen thallus saturated with liquid water was exposed to subzero temperatures, or if a dry thallus was rehydrated only from snow at subzero temperatures. When water-saturated thalli *U. aprina* were slowly cooled at subzero temperatures, ice nucleation activity could be detected at -5.4°C, indicating extracellular freezing of water. With low-temperature scanning electron microscopy (LTSEM) it was demonstrated that extracellular ice formation leads to cytorrhysis in the photobiont cells and to cavitation in the mycobiont cells. Both processes were reversible if the lichen thallus was re-warmed. When dry lichen thalli were covered with snow at subzero temperatures a substantial re-hydration from snow could be observed in LTSEM micrographs and measured gravimetrically. Carbon dioxide gas exchange measurements revealed that metabolic activity was initiated during re-hydration from snow at subzero temperatures. (Auth. mod.)

50-2843

Simulation of the mixed-layer circulation in the Arctic Ocean.

Holland, D.M., Mysak, L.A., Oberhuber, J.M., *Journal of geophysical research,* Jan. 15, 1996, 101(C1), p.1111-1128, 28 refs.

Oceanography, Ocean currents, Hydrography, Air ice water interaction, Sea ice distribution, Drift, Ice cover effect, Wind factors, Buoyancy, Turbulent diffusion, Mathematical models, Arctic Ocean

50-2844

Modeling the heating and melting of sea ice through light absorption by microalgae.

Zeebe, R.E., Eicken, H., Robinson, D.H., Wolf-Gladrow, D., Dieckmann, G.S., *Journal of geophysical research,* Jan. 15, 1996, 101(C1), p.1163-1181, 52 refs.

Marine biology, Oceanography, Sea ice, Thermal regime, Ice melting, Ice heat flux, Biomass, Algae, Insolation, Radiation absorption, Thermodynamics, Snow cover effect, Antarctica—Weddell Sea, Antarctica—McMurdo Sound

To investigate the effects of microalgae on the thermal regime of sea ice, a time-dependent, one-dimensional thermodynamic model of sea ice was coupled to a bio-optical model. A spectral one-stream model was employed to determine spectral attenuation by snow, sea ice, and microalgae. Energy absorption was obtained by calculating the divergence of irradiance in every layer of the model ($\Delta z = 1$ cm). Changes in sea ice temperature profiles were calculated by solving the heat conduction equation with a finite difference scheme. Model results indicate that when algal biomass is concentrated at the bottom of congelation ice, melting of ice resulting from the additional conversion of solar radiation into heat may effectively destroy the algal habitat, thereby releasing algal biomass into the water column. An algal layer located in the top of the ice sheet induced a significant increase in sea ice temperature for snow depths less than 5 cm and algal standing stocks higher than 150 mg chl a/m^2. Furthermore, under these conditions, brine volume increased by 21% from 181 to 219 parts per thousand, which decreased the physical strength of the ice. Examples are cited for McMurdo Sound and the Weddell Sea. (Auth. mod.)

50-2845

Physical and geochemical properties across the Atlantic/Pacific water mass front in the southern Canadian Basin.

McLaughlin, F.A., Carmack, E.C., Macdonald, R.W., Bishop, J.K.B., *Journal of geophysical research,* Jan. 15, 1996, 101(C1), p.1183-1197, 29 refs.

Oceanography, Ocean currents, Geochemistry, Sampling, Hydrography, Boundary layer, Stratification, Fluid dynamics, Correlation, Arctic Ocean

50-2846

Temperature variability beneath Ronne Ice Shelf, Antarctica, from thermistor cables.

Nicholls, K.W., *Journal of geophysical research,* Jan. 15, 1996, 101(C1), p.1199-1210, 25 refs.

Oceanography, Hydrography, Ice shelves, Ocean currents, Advection, Water temperature, Ice water interface, Ice cover effect, Thermistors, Temperature measurement, Temperature variations, Seasonal variations, Antarctica—Ronne Ice Shelf

Thermistor cables have been deployed at two sites beneath Ronne Ice Shelf. One site is to the east of a submarine ridge that delineates the eastern boundary of the Ronne Depression, and the other is 100 km to the north, above the eastern slope of the depression. Long-term records from the cables (up to 22 months) indicate a large difference in the temperature variability at the two sites, being an order of magnitude greater in the Ronne Depression (site 2). The high variability in the site 2 record has allowed the construction of a simple descriptive model of the local oceanographic regime. Winter freezing in the open water north of the ice front generates Western Shelf Water (WSW), a type of High Salinity Shelf Water, which travels southwest beneath the ice shelf, appearing at site 2 as a slope-trapped current at the bottom of the water column. Site 2 is on the eastern slope of the depression where the wave-induced eastward motion forces Ice Shelf Water to rise, resulting in periodic ice-platelet formation in the water column, as surmised from conductivity-temperature-depth measurements at the site. The depth of the WSW layer decreased by 40 to 60 m during a 100-day period starting some 4 months after the beginning of the summer. (Auth. mod.)

50-2847

Boreal forest and the polar front.

Pielke, R.A., Vidale, P.L., *Journal of geophysical research,* Dec. 20, 1995, 100(D12), p.25,755-25,758, 28 refs.

Climatology, Air masses, Atmospheric boundary layer, Forest land, Tundra terrain, Surface energy, Surface temperature, Heat balance, Heat flux, Soil air interface, Vegetation factors

50-2848

Polar stratospheric clouds and volcanic aerosol during spring 1992 over McMurdo Station, Antarctica: lidar and particle counter comparisons.

Adriani, A., Deshler, T., Di Donfrancesco, G., Gobbi, G.P., *Journal of geophysical research,* Dec. 20, 1995, 100(D12), p.25,877-25,897, 65 refs.

Polar atmospheres, Climatology, Polar stratospheric clouds, Cloud physics, Sounding, Lidar, Optical properties, Refractivity, Light scattering, Classifications, Ice optics, Aerosols, Particle size distribution, Volcanic ash, Antarctica—McMurdo Station

Coordinated observations with lidar and balloon-borne particle counters were used to characterize polar stratospheric clouds and to estimate a particle index of refraction. The index of refraction was estimated from comparisons of calculated and measured scattering ratios at a wavelength of 532 nm. The clouds, measured from McMurdo Station, were observed above 11 km at temperatures below 198 K and were divided into three classes based on their scattering properties and particle size. Clouds with a low scattering ratio, high depolarization, and significant fraction of particles with radii of >2.0 µm had a mean index of refraction of 1.42 and a mode of 1.43. Clouds with a moderate scattering ratio, low depolarization, and fewer particles of >2.0 µm had a mean index of refraction of 1.39 and a mode of 1.37. Ice clouds, apparent from measurements of high scattering ratio, high depolarization, and high concentrations of particles of >1.0 µm, had a mean index of refraction of 1.32 and a mode of 1.31. Measurements in volcanic aerosol indicated a mean index of 1.43. (Auth. mod.)

50-2849

Ozone and aerosol correlated observations at Thule, Greenland, in the period 1991-1994.
Di Sarra, A., et al, *Journal of geophysical research,* Dec. 20, 1995, 100(D12), p.25,965-25,977, 57 refs.
Polar atmospheres, Climatology, Polar stratospheric clouds, Cloud physics, Ozone, Aerosols, Volcanic ash, Turbulent diffusion, Lidar, Sounding, Backscattering, Profiles, Correlation, Greenland—Thule

50-2850

Dimethyl sulfide in the arctic atmosphere.
Ferek, R.J., Hobbs, P.V., Radke, L.F., Herring, J.A., Sturges, W.T., Cota, G.F., *Journal of geophysical research,* Dec. 20, 1995, 100(D12), p.26,093-26,104, 33 refs.
Climatology, Marine biology, Polar atmospheres, Atmospheric composition, Aerosols, Particle size distribution, Air ice water interaction, Algae, Sampling, Seasonal variations

50-2851

Alone: the classic polar adventure.
Byrd, R.E., New York, Kodansha America Inc., 1995, 309p., Originally published: New York, G.P. Putnam's Sons, 1938. Facsimile edition based on the 1938 publication, with a new afterword by D.G. Campbell.
DLC G585.B8A3 1995
Exploration, Expeditions, Ice shelves, Air temperature, Wind velocity, Antarctica—Ross Ice Shelf
It was during this Expedition that Byrd established Bolling Advance Weather Base on the Ross Ice Shelf on the line between Little America and the South Pole. Byrd wanted to be the one to man the Advance Base simply for the experience. Aside from making meteorological and auroral observations, which he did faithfully and meticulously, there was no important work to be done there. As the tale evolved, his most immediate task was to keep himself alive for three months as he battled alone the ravages of carbon monoxide poisoning, winter darkness, bitter cold, and raging winds, to endure what has been termed the greatest adventure of all.

50-2852

Snow-vegetation relations in the forest tundra of New Quebec, Hudson Bay. [Relations neige-végétation dans la toundra forestière du Nouveau-Québec, Baie d'Hudson]
Payette, S., Filion, L., Ouzilleau, J., *Naturaliste canadien,* Sep.-Oct. 1973, 100(5), p.493-508, In French with English summary. 16 refs.
Plant ecology, Forest tundra, Forest ecosystems, Tundra vegetation, Vegetation patterns, Snow surveys, Snow cover distribution, Snow depth, Snow cover effect, Topographic effects, Canada—Quebec—Hudson Bay

50-2853

Antifreeze proteins in winter rye are similar to pathogenesis-related proteins.
Hon, W.C., Griffith, M., Mlynarz, A., Kwok, Y.C., Yang, D.S.C., *Plant physiology,* Nov. 1995, 109(3), p.879-889, 71 refs.
Plant physiology, Cryobiology, Grasses, Frost resistance, Cold weather survival, Acclimatization, Antifreezes, Ice nuclei, Heterogeneous nucleation, Chemical analysis

50-2854

Reversible photoinhibition in antarctic moss during freezing and thawing.
Lovelock, C.E., Jackson, A.E., Melick, D.R., Seppelt, R.D., *Plant physiology,* Nov. 1995, 109(3), p.955-961, 41 refs.
Mosses, Plant physiology, Plant tissues, Freeze thaw tests, Light effects, Photochemical reactions, Cold weather tests, Acclimatization, Desiccation, Antarctica—Casey Station
Tolerance of antarctic moss to freezing and thawing stress was investigated using chlorophyll *a* fluorescence. Freezing in darkness caused reductions in F_v/F_m (ratio of variable to maximum fluorescence) and F_0 (initial fluorescence) that were reversible upon thawing. Reductions in F_v/F_m and F_0 during freezing in darkness indicate a reduction in the potential efficiency of photosystem 11 that may be due to conformational changes in pigment-protein complexes from the desiccation associated with freezing. The absorption of light during freezing further reduced F_v/F_m and F_0 but was also reversible. Using dithiothreitol (DTT), which inhibits the formation of the carotenoid zeaxanthin, reduced fluorescence quenching during freezing and reduced concentrations of zeaxanthin and antheraxanthin after freezing in DTT-treated moss was revealed. Reduced concentrations of zeaxanthin and antheraxanthin in DTT-treated moss were partially associated with reductions in nonphotochemical fluorescence quenching. (Auth. mod.)

50-2855

Numerical study of the circulation of the Bering Sea basin and exchange with the North Pacific Ocean.
Overland, J.E., Spillane, M.C., Hurlburt, H.E., Wallcraft, A.J., *Journal of physical oceanography,* Apr. 1994, 24(4), p.736-758, 40 refs.
Oceanography, Ocean currents, Hydrography, Sea level, Turbulent exchange, Turbulent flow, Hydrodynamics, Mathematical models, Seasonal variations, Bering Sea

50-2856

Circulation in the Bering Sea basin observed by satellite-tracked drifters: 1986-1993.
Stabeno, P.J., Reed, R.K., *Journal of physical oceanography,* Apr. 1994, 24(4), p.848-854, 23 refs.
Oceanography, Ocean currents, Velocity measurement, Drift stations, Remote sensing, Topographic effects, Bering Sea

50-2857

Holocene development of a debris slope in subarctic Québec, Canada.
Marion, J., Filion, L., Hétu, B., *Holocene,* Dec. 1994, 5(4), p.409-419, 65 refs.
Subarctic landscapes, Quaternary deposits, Permafrost physics, Discontinuous permafrost, Talus, Slope stability, Fires, Periglacial processes, Landscape development, Stratigraphy, Radioactive age determination, Canada—Quebec

50-2858

Origin, chronology and climatological significance of annual-moraine ridges at Myrdalsjökull, Iceland.
Krüger, J., *Holocene,* Dec. 1994, 5(4), p.420-427, 28 refs.
Glacial geology, Geomorphology, Moraines, Sedimentation, Mass movements (geology), Glacier oscillation, Climatic changes, Glacier tongues, Ice edge, Ice solid interface, Iceland—Myrdalsjökull

50-2859

Carbon and oxygen isotope variations among lacustrine ostracods: implications for palaeoclimatic studies.
Heaton, T.H.E., Holmes, J.A., Bridgwater, N.D., *Holocene,* Dec. 1994, 5(4), p.428-434, 26 refs.
Paleoclimatology, Limnology, Biomass, Lacustrine deposits, Sampling, Isotope analysis, Oxygen isotopes, Water chemistry

50-2860

'Blooms' of the toxic dinoflagellate *Gymnodinium catenatum* as evidence of climatic fluctuations in the late Holocene of southwestern Scandinavia.
Thorsen, T.A., Dale, B., Nordberg, K., *Holocene,* Dec. 1994, 5(4), p.435-446, 32 refs.
Paleoecology, Marine biology, Paleoclimatology, Climatic changes, Plankton, Biomass, Bottom sediment, Drill core analysis, Sampling, Palynology, Radioactive age determination, Correlation, North Sea

50-2861

Late Younger Dryas to Holocene palaeoenvironments of the southern Kattegat, Scandinavia.
Conradsen, K., *Holocene,* Dec. 1994, 5(4), p.447-456, 47 refs.
Paleoclimatology, Climatic changes, Oceanography, Hydrography, Marine deposits, Bottom sediment, Drill core analysis, Sampling, Radioactive age determination, Correlation, Denmark—Kattegat

50-2862

Satellite observation of lake ice as a climate indicator: initial results from statewide monitoring in Wisconsin.
Wynne, R.H., Lillesand, T.M., *Photogrammetric engineering & remote sensing,* June 1993, 59(6), p.1023-1031, 43 refs.
Climatology, Climatic changes, Lake ice, Ice surveys, Ice breakup, Ice formation, Spaceborne photography, Remote sensing, Radiometry, Global warming, Correlation, United States—Wisconsin

50-2863

Chip off the old Rutschblock.
Abromeit, D., *Climbing,* Dec. 1995-Feb. 1996, No.149, p.136-138.
Avalanche forecasting, Mechanical tests, Excavation, Snow cover stability, Avalanche triggering, Slope stability, Slope orientation, Safety

50-2864

Effects of freeze-thaw cycling on geomembrane sheets and their seams.
Comer, A.I., Sculli, M.L., Hsuan, Y.G., Geosynthetics '95 Conference, Nashville, TN, Feb. 21-23, 1995. Proceedings, Vol.3, St. Paul, Industrial Fabrics Association International, 1995, p.853-866, 9 refs.
DLC TA455.G44 G438
Synthetic materials, Linings, Covering, Geotextiles, Strains, Tensile properties, Freeze thaw cycles, Freeze thaw tests, Temperature effects

50-2865

Use of geosynthetics to prevent white phosphorus poisoning of waterfowl in Eagle River Flats, Alaska.
Henry, K.S., Collins, C.M., Racine, C.H., MP 3763, Geosynthetics '95 Conference, Nashville, TN, Feb. 21-23, 1995. Proceedings, Vol.2, St. Paul, Industrial Fabrics Association International, 1995, p.483-496, 13 refs.
DLC TA455.G44 G438
Water pollution, Ponds, Ecology, Bottom sediment, Suspended sediments, Explosives, Environmental impact, Environmental protection, Synthetic materials, Geotextiles, Filters, Linings, Porosity, Performance, United States—Alaska—Eagle River Flats
Experiments were conducted to investigate the feasibility of using geosynthetics to keep waterfowl from eating white-phosphorus-contaminated pond sediments in an estuarine salt marsh. A laboratory study evaluated whether white phosphorus particles become suspended into overlying water because of 1) upward water flow through contaminated sediment capped (or not) with geotextile or 2) tapping of the top of the geotextile or sediment and then vigorously stirring the water to simulate waterfowl feeding and swimming. White phosphorus particles of a size that would be dangerous to waterfowl did not become suspended in the water column under any of the test conditions. A field study documented sedimentation and vegetation growth on three geotextiles and on an erosion control product placed on the bottom of salt marsh ponds. A means to vent gas formed in sediments through saturated material with pore diameters smaller than 3.4 mm is needed, as well as a way to anchor products in ponded areas subject to strong tidal action.

50-2866

Use of thermal insulating geosynthetics as a substitute for soil protective cover: an engineered approach.
Deutsch, W.L., Jr., Geosynthetics '95 Conference, Nashville, TN, Feb. 21-23, 1995. Proceedings, Vol.2, St. Paul, Industrial Fabrics Association International, 1995, p.813-827, 10 refs.
DLC TA455.G44 G438
Earth fills, Waste disposal, Covering, Synthetic materials, Geotextiles, Thermal insulation, Thermal properties, Frost penetration, Frost protection, Thermal conductivity, Performance

50-2867

135,000-year Vostok SPECMAP common temporal framework.
Sowers, T., et al, *Paleoceanography,* Dec. 1993, 8(6), p.737-766, Refs. p.763-766.
Paleoclimatology, Oceanography, Pleistocene, Air temperature, Surface temperature, Ice sheets, Ice cores, Sea water, Sampling, Isotope analysis, Correlation, Antarctica—Vostok Station
The object of the present study is to introduce a means of comparing the antarctic Vostok and marine chronologies. The authors use the $\delta^{18}O$ of atmospheric O_2 (denoted $\delta^{18}O_{atm}$) from the Vostok ice core as a proxy for the $\delta^{18}O$ of seawater (denoted $\delta^{18}O_{sw}$). The underlying premise in using $\delta^{18}O_{atm}$ as a proxy for $\delta^{18}O_{sw}$ is that past variations in $\delta^{18}O_{sw}$ (an indicator of continental ice volume) have been transmitted to the atmospheric O_2 reservoir by photosynthesizing organisms in the surface waters of the world's oceans. By correlating $\delta^{18}O_{atm}$ with $\delta^{18}O_{sw}$, a common temporal framework for comparing phase relationships between atmospheric records (from ice cores) and oceanographic records constructed from deep sea cores is produced. The correlated age-depth relation for the Vostok core should not be considered an absolute Vostok timescale. It is rather the preferred timescale for comparing Vostok climate records with marine climate records which have been placed on the SPECMAP timescale. The fidelity of this common temporal framework is examined by comparing sea surface temperatures (SST) records from sediment

cores with an antarctic temperature record from the Vostok ice core, demonstrating that when the southern ocean SST and antarctic temperature records are compared in this common temporal framework, they show a high degree of similarity. (Auth. mod.)

50-2868

Low-order model of the Heinrich event cycle.
MacAyeal, D.R., *Paleoceanography*, Dec. 1993, 8(6), p.767-773, 8 refs.
Paleoclimatology, Oceanography, Ice sheets, Ice physics, Glacier thickness, Glacier oscillation, Glacier melting, Icebergs, Periodic variations, Thermodynamics, Ice models, Mathematical models

50-2869

Binge/purge oscillations of the Laurentide ice sheet as a cause of the North Atlantic's Heinrich events.
MacAyeal, D.R., *Paleoceanography*, Dec. 1993, 8(6), p.775-784, 25 refs.
Pleistocene, Glaciology, Oceanography, Glacier oscillation, Glacial geology, Glacier beds, Ice solid interface, Ocean currents, Ice melting, Meltwater, Icebergs, Periodic variations, Ice models, Climatic factors, Ice cover effect

50-2870

XVI Polar Symposium: Achievements and Prospects of Polish Polar Research, Toruń, Sep. 19-20, 1989. [XVI Sympozjum Polarne: Dorobek i Perspektywy Polskich Badań Polarnych, Toruń, 19-20 września 1989 r.]
Polar Symposium, 16th, Toruń, Poland, Sep. 19-20, 1989, Olszewski, A., ed, Toruń, Uniwersytet Mikołaja Kopernika, 1989, 271p., In Polish. Refs. passim. For selected papers see 50-2871 through 50-2934 or A-54354, A-54359, B-54367 through B-54373, E-54355, E-54356, E-54360 through E-54363, F-54357, I-54364 through I-54366, I-54374, M-54358 and M-54375.
DLC G578.S955 1989
Glacial geology, Plankton, Marine biology, Biomass, Norway—Spitsbergen, Antarctica
In this collection of over 68 papers, 22 deal with the southern polar region. Such topics as the history of Polish antarctic research, geophysics and geology, climatology and glaciology, marine biology, and bioclimatology at Arctowski Station are discussed.

50-2871

Polar Club and its activities. [Klub Polarny i jego dzieje]
Jahn, A., XVI Sympozjum Polarne: Dorobek i perspektywy Polskich badań polarnych (16th Polar Symposium: Achievements and Prospects of Polish Polar Research). Edited by A. Olszewski, Toruń, Uniwersytet Mikołaja Kopernika, 1989, p.15-40, In Polish.
DLC G578.S955 1989
Meetings, Research projects, History, Poland

50-2872

First Poles in Antarctica—the beginnings of the history of our Antarctic studies. [Pierwsi Polacy w Antarktyce—początki historii naszych badań Antarktycznych]
Zalewski, S.M., XVI Sympozjum Polarne: Dorobek i perspektywy Polskich badań polarnych (16th Polar Symposium: Achievements and Prospects of Polish Polar Research). Edited by A. Olszewski, Toruń, Uniwersytet Mikołaja Kopernika, 1989, p.41-45, In Polish.
DLC G578.S955 1989
History, Research projects, Expeditions, Organizations, Antarctica
An overview of Polish antarctic studies is presented, from Poland's participation in the second International Polar Year in 1932-1933 through the establishment of Arctowski Station in 1977. Names of the more prominent individuals, the scope of their activities, and dates are cited.

50-2873

Bunger Hills—its genesis and some physiogeographical problems. [Oaza Bungera—jej geneza i niektóre problemy fizycznogeograficzne]
Wiśniewski, E., XVI Sympozjum Polarne: Dorobek i perspektywy Polskich badań polarnych (16th Polar Symposium: Achievements and Prospects of Polish Polar Research). Edited by A. Olszewski, Toruń, Uniwersytet Mikołaja Kopernika, 1989, p.45-50, In Polish.
DLC G578.S955 1989
Geomorphology, Geocryology, Glacial geology, Hydrography, Antarctica—Bunger Hills
Several hypotheses on the origin of Bunger Hills, as well as the most plausible one (by American geologist E.T. Apfel), are reviewed. The immediate environment, including the local climate and its effects, is discussed (e.g., strong winds, low humidity). The ice free regions, lakes, ice cliffs, central moraine, and direction of runoff are also described.

50-2874

Problems in geodynamic studies of Antarctica. [Problemy badań geodynamicznych Antarktyki]
Guterch, A., XVI Sympozjum Polarne: Dorobek i perspektywy Polskich badań polarnych (16th Polar Symposium: Achievements and Prospects of Polish Polar Research). Edited by A. Olszewski, Toruń, Uniwersytet Mikołaja Kopernika, 1989, p.50-54, In Polish.
DLC G578.S955 1989
Glacial geology, Tectonics, Earth crust, Models, Antarctica—South Shetland Islands, Antarctica—Antarctic Peninsula, Antarctica—Bransfield Strait, Antarctica—South Shetland Trench, Antarctica—Drake Passage
A tectonic-physical model of the earth's crust for passages from the Antarctic Peninsula through the Bransfield Strait, South Shetlands, to the oceanic trench in the Drake Passage is presented. This model was constructed on the basis of results from deep seismic soundings and shallow reflection soundings of the earth's crust, carried out by an expedition from the Polish Academy of Sciences. It is accepted as the standard for one of the main antarctic transects, joining the group of world networks of transects, along which intensive geodynamic research work has been coordinated by the International Committee on Lithospheric Research. (Auth. mod.)

50-2875

Ecosystem of the sea ice in Antarctica. [Ekosystem lodu morskiego w Antarktyce]
Rakusa-Suszczewski, S., XVI Sympozjum Polarne: Dorobek i perspektywy Polskich badań polarnych (16th Polar Symposium: Achievements and Prospects of Polish Polar Research). Edited by A. Olszewski, Toruń, Uniwersytet Mikołaja Kopernika, 1989, p.54-58, In Polish. 6 refs.
DLC G578.S955 1989
Marine biology, Biomass, Sea ice, Plankton, Expeditions, Ice edge, Ecology, Antarctica—South Orkney Islands, Antarctica—Elephant Island, Antarctica—King George Island
In Dec. 1988 and Jan. 1989 the R/V *Professor Siedlecki* sailed to the sea ice zone between Elephant I. and the South Orkney Is. The hydrochemical characteristics of the water masses were confirmed in the study area. A high degree of diversification of bacteria in the water and in the ice, as well as high diversification in free amino acids, were found. The populations of phytoplankton and zooplankton were analyzed. A study of *Euphausia superba* showed 3 areas which were distinguished by structure and size. The krill close to the ice pack was smaller; the largest concentrations of the very large krill were confined to the west of Elephant I. (Auth. mod.)

50-2876

Antarctic Treaty's 30 years of operation. [30 lat funkcjonowania Układu w sprawie Antarktyki]
Machowski, J., XVI Sympozjum Polarne: Dorobek i perspektywy Polskich badań polarnych (16th Polar Symposium: Achievements and Prospects of Polish Polar Research). Edited by A. Olszewski, Toruń, Uniwersytet Mikołaja Kopernika, 1989, p.58-61, In Polish. 9 refs.
DLC G578.S955 1989
Natural resources, International cooperation, Legislation, History, Antarctica
A review of the Antarctic Treaty, its history and significance is presented. The optimal protection and use of Antarctica and its resources, in the interests of all people and nations—especially developing countries—is stressed. Active participation by Poland in the support and continued development of the Antarctic Treaty System is strongly recommended.

50-2877

Prospects for Polish studies in Antarctica. [Perspektywy polskich badań w Antarktyce]
Birkenmajer, K., XVI Sympozjum Polarne: Dorobek i perspektywy Polskich badań polarnych (16th Polar Symposium: Achievements and Prospects of Polish Polar Research). Edited by A. Olszewski, Toruń, Uniwersytet Mikołaja Kopernika, 1989, p.61-69, In Polish.
DLC G578.S955 1989
Research projects, International cooperation, History, Global change, Education, Antarctica
A review of the history of Polish activities in Antarctica is presented. The directives for Polish antarctic research for 1991-1995 (geodynamics of the lithosphere and polar marine biology) and the relationship of Polish antarctic research to the international program "Global Change" are discussed.

50-2878

Seismo-acoustic studies in a flooded caldera on Deception Island. [Badania sejsmoakustyczne w zatopionej kalderze wyspy Deception]

Kowalewski, W., Rudowski, S., Zalewski, S.M., XVI Sympozjum Polarne: Dorobek i perspektywy Polskich badań polarnych (16th Polar Symposium: Achievements and Prospects of Polish Polar Research). Edited by A. Olszewski, Toruń, Uniwersytet Mikołaja Kopernika, 1989, p.70-75, In Polish. 6 refs.

DLC G578.S955 1989

Geomorphology, Volcanoes, Acoustics, Seismic surveys, Origin, Remote sensing, Antarctica—Deception Island

Studies were carried out in 1984-1985 and 1987-1988, under the auspices of the Geodynamic Expeditions of the Geophysics Institute of the Polish Academy of Sciences and under the leadership of Prof. A. Gutech. The propagation of several main seismo-acoustic units was distinguished at the seafloor of the caldera. Results from this work have provided new data on the formation and development of Deception Island, showing, for example, that some faults are young and active even today. (Auth. mod.)

50-2879

Problems associated with the occurrence of glacial forms on the bottom of fjords in Spitsbergen, on the basis of a seismoacoustic profile. [Problematyka występowania form glacjalnych w dnie fiordów Spitsbergenu, na podstawie profilowania sejsmoakustycznego]

Kowalewski, W., Rudowski, S., Zalewski, S.M., XVI Sympozjum Polarne: Dorobek i perspektywy Polskich badań polarnych (16th Polar Symposium: Achievements and Prospects of Polish Polar Research). Edited by A. Olszewski, Toruń, Uniwersytet Mikołaja Kopernika, 1989, p.75-77, In Polish.

DLC G578.S955 1989

Seismic surveys, Acoustics, Remote sensing, Moraines, Fjords, Norway—Spitsbergen

50-2880

Geology of the eastern coast of Discovery Bay, Greenwich Island and the South Shetlands. [Geologia wschodnich wybrzeży Discovery Bay, Wyspa Greenwich, Szetlandy Południowe]

Rudowski, S., XVI Sympozjum Polarne: Dorobek i perspektywy Polskich badań polarnych (16th Polar Symposium: Achievements and Prospects of Polish Polar Research). Edited by A. Olszewski, Toruń, Uniwersytet Mikołaja Kopernika, 1989, p.81-82, In Polish.

DLC G578.S955 1989

Geology, Topographic features, Glacial geology, Periglacial processes, Antarctica—Discovery Bay, Antarctica—Greenwich Island, Antarctica—South Shetland Islands

The exposure of chalky granite intrusion and mountain-chalk tertiary vulcanites (basalt lava, andesites, volcanic aglomerates, tuffs) exposed in southern Guesalaga and along the rocky patch from Ash Point through Angamos and Poisson Hill along the Lopez slope are profiled. (Auth. mod.)

50-2881

Modelling mountain slopes from the Late Vistulian, in the example of the mountain massif Thuefjellet-Kosterfjellet (Western Spitsbergen). [Modelowanie stoków górskich od późnego Vistulianu na przykładzie masywu górskiego Thuefjellet-Kosterfjellet (Spitsbergen Zachodni)]

Drecki, J., XVI Sympozjum Polarne: Dorobek i perspektywy Polskich badań polarnych (16th Polar Symposium: Achievements and Prospects of Polish Polar Research). Edited by A. Olszewski, Toruń, Uniwersytet Mikołaja Kopernika, 1989, p.82-85, In Polish. 4 refs.

DLC G578.S955 1989

Slopes, Slope orientation, Terraces, Solifluction, Marine geology, Glacial deposits, Moraines, Norway—Spitsbergen

50-2882

Chemical weathering of rocks in the Hecla Hoek coal formations under polar climatic conditions (Bellsund region, Western Spitsbergen). [Wietrzenie chemiczne skał węglanowych formacji Hecla Hoek w warunkach klimatu polarnego (rejon Bellsundu, Zachodni Spitsbergen)]

Chlebowski, R., XVI Sympozjum Polarne: Dorobek i perspektywy Polskich badań polarnych (16th Polar Symposium: Achievements and Prospects of Polish Polar Research). Edited by A. Olszewski, Toruń, Uniwersytet Mikołaja Kopernika, 1989, p.85-88, In Polish.

DLC G578.S955 1989

Frozen rocks, Weathering, Rock mechanics, Temperature effects, Norway—Spitsbergen

50-2883

Dynamics of the processes of mechanical and chemical denudation in the Bellsund region. [Dynamika procesów denudacji mechanicznej i chemicznej w rejonie Bellsundu]

Bartoszewski, S., Magierski, J., XVI Sympozjum Polarne: Dorobek i perspektywy Polskich badań polarnych (16th Polar Symposium: Achievements and Prospects of Polish Polar Research). Edited by A. Olszewski, Toruń, Uniwersytet Mikołaja Kopernika, 1989, p.88-90, In Polish. 4 refs.

DLC G578.S955 1989

Water chemistry, Glacial hydrology, Glacial rivers, River basins, Norway—Spitsbergen

50-2884

Geomorphology of the shelf of the South Shetland Islands within the limits of Bransfield Strait. [Geomorfologia szelfu Południowych Szetlandów w obrębie Cieśniny Bransfielda]

Marsz, A.A., XVI Sympozjum Polarne: Dorobek i perspektywy Polskich badań polarnych (16th Polar Symposium: Achievements and Prospects of Polish Polar Research). Edited by A. Olszewski, Toruń, Uniwersytet Mikołaja Kopernika, 1989, p.91-94, In Polish.

DLC G578.S955 1989

Ice shelves, Geomorphology, Marine geology, Antarctica—South Shetland Islands, Antarctica—Bransfield Strait

The morphology of the surface of the South Shetlands shelf, from the Bransfield Strait side to the passage from Livingston I. to King George I., as well as elements of the morphology of the adjacent continental slope, are discussed. The relief of the shelf differs fundamentally in morphometric characteristics from the South Shetlands shelf on the side of the Drake Passage. The dominant role in the formation of the shelf relief was played by tectonics, which was responsible for orientation and later glacial erosion. One may assume that the separate geomorphological character of the higher shelf level is connected with the extent of glacial processes (the effect of glacial accumulation?). (Auth. mod.)

50-2885

Paleogeography of the Hörbye valley during the Plenivistulian and Holocene—Billefjorden, Central Spitsbergen. [Paleografia doliny Hörbye podczas Plenivistulianu i Holocenu—Billefjorden, Centralny Spitsbergen]

Karczewski, A., XVI Sympozjum Polarne: Dorobek i perspektywy Polskich badań polarnych (16th Polar Symposium: Achievements and Prospects of Polish Polar Research). Edited by A. Olszewski, Toruń, Uniwersytet Mikołaja Kopernika, 1989, p.94-98, In Polish. 3 refs.

DLC G578.S955 1989

Glacial deposits, Moraines, Glacier surges, Norway—Spitsbergen

50-2886

Raised marine terraces on the western border of Petuniabukta, central Spitsbergen. [Podniesione terasy morskie zachodniego obrzeża Petuniabukty, Spitsbergen środkowy]

Rygielski, W., Sprutta, M., XVI Sympozjum Polarne: Dorobek i perspektywy Polskich badań polarnych (16th Polar Symposium: Achievements and Prospects of Polish Polar Research). Edited by A. Olszewski, Toruń, Uniwersytet Mikołaja Kopernika, 1989, p.98-99, In Polish.

DLC G578.S955 1989

Terraces, Marine geology, Quaternary deposits, Norway—Spitsbergen

50-2887

Sea levels in Petuniabukta—central Spitsbergen. [Poziomy morskie w Petuniabukta—Spitsbergen środkowy]

Stankowski, W., XVI Sympozjum Polarne: Dorobek i perspektywy Polskich badań polarnych (16th Polar Symposium: Achievements and Prospects of Polish Polar Research). Edited by A. Olszewski, Toruń, Uniwersytet Mikołaja Kopernika, 1989, p.100-104, In Polish. 5 refs.

DLC G578.S955 1989

Sea level, Glacial deposits, Marine deposits, Geomorphology, Radioactive age determination, Norway—Spitsbergen

50-2888

Chemical-mineralogical characteristics of the water and sediments in the Petuniabukta tidal area. [Charakterystyka chemiczno-mineralogiczna wód i osadów równi pływowej Petuniabukta]

Stankowska, A., XVI Sympozjum Polarne: Dorobek i perspektywy Polskich badań polarnych (16th Polar Symposium: Achievements and Prospects of Polish Polar Research). Edited by A. Olszewski, Toruń, Uniwersytet Mikołaja Kopernika, 1989, p.104-108, In Polish.

DLC G578.S955 1989

Sediments, Water chemistry, Water content, Norway—Spitsbergen

50-2889

Relief of the Breinesflya plain and Wiederfjellet massif in western Sörkapp Land (Spitsbergen). [Rzeźba równiny Breinesflya i masywu Wiederfjellet Zachodniego Sörkapp Land (Spitsbergen)]

Gębica, P., XVI Sympozjum Polarne: Dorobek i perspektywy Polskich badań polarnych (16th Polar Symposium: Achievements and Prospects of Polish Polar Research). Edited by A. Olszewski, Toruń, Uniwersytet Mikołaja Kopernika, 1989, p.109-111, In Polish. 5 refs.

DLC G578.S955 1989

Geomorphology, Valleys, Landforms, Glacial geology, Norway—Spitsbergen

50-2890

Profile of the sub-moraine organogenetic sediments in the forefield of the Renard Glacier, Wedel Jarlsberg Land, Spitsbergen. [Profil podmorenowych osadów organogenicznych na przedpolu lodowca Renarda, Wedel Jarlsberg Land, Spitsbergen]

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DLC G578.S955 1989

Moraines, Sediments, Glacial deposits, Palynology, Pollen, Norway—Spitsbergen

50-2891

Old moraines in Lågnesflya (Western Spitsbergen). [Stare moreny na Lågnesflya (Spitsbergen Zachodni)]

Musiał A., XVI Sympozjum Polarne: Dorobek i perspektywy Polskich badań polarnych (16th Polar Symposium: Achievements and Prospects of Polish Polar Research). Edited by A. Olszewski, Toruń, Uniwersytet Mikołaja Kopernika, 1989, p.114-117, In Polish.

DLC G578.S955 1989

Moraines, Glacial deposits, Glacial geology, Geomorphology, Norway—Spitsbergen

50-2892

Deglaciation of the western part of Nordenskiöld Land (Spitsbergen). [Deglacjacja zachodniej części Ziemi Nordenskiölda (Spitsbergen)]

Kapała, J.B., XVI Sympozjum Polarne: Dorobek i perspektywy Polskich badań polarnych (16th Polar Symposium: Achievements and Prospects of Polish Polar Research). Edited by A. Olszewski, Toruń, Uniwersytet Mikołaja Kopernika, 1989, p.117-118, In Polish.

DLC G578.S955 1989

Glaciation, Glacier ablation, Norway—Spitsbergen

50-2893

Hydraulic geometry of the supraglacial stream Ragnarbreen, Spitsbergen. [Geometria hydrauliczna potoku supraglacjalnego, Ragnarbreen, Spitsbergen]

Kostrzewski, A., Zwoliński, Z., XVI Sympozjum Polarne: Dorobek i perspektywy Polskich badań polarnych (16th Polar Symposium: Achievements and Prospects of Polish Polar Research). Edited by A. Olszewski, Toruń, Uniwersytet Mikołaja Kopernika, 1989, p.118-121, In Polish.

DLC G578.S955 1989

Glacial hydrology, Streams, Glacier surfaces, Norway—Spitsbergen

50-2894

Building and classification of sandbanks in river beds in the foreground of Hörbye Glacier—Central Spitsbergen. [Budowa i klasyfikacja łach w korytach rzek roztokowych na przedpolu lodowca Hörbye—Spitsbergen Srodkowy]

Rachlewicz, G., XVI Sympozjum Polarne: Dorobek i perspektywy Polskich badań polarnych (16th Polar Symposium: Achievements and Prospects of Polish Polar Research). Edited by A. Olszewski, Toruń, Uniwersytet Mikołaja Kopernika, 1989, p.122-124, In Polish. 3 refs.

DLC G578.S955 1989

Banks (waterways), Glaciers, Glacier ablation, Glacier oscillation, Glacial deposits, Rivers, Outwash, Norway—Spitsbergen

50-2895

Diamictite facies in the middle glacial periods. [Facje diamiktonowe środowisk pośrednioglacjalnych]

Olszewski, A., XVI Sympozjum Polarne: Dorobek i perspektywy Polskich badań polarnych (16th Polar Symposium: Achievements and Prospects of Polish Polar Research). Edited by A. Olszewski, Toruń, Uniwersytet Mikołaja Kopernika, 1989, p.124-132, In Polish.

DLC G578.S955 1989

Glacial geology, Glacial deposits, Sediments, Lithology, Geomorphology

50-2896

Geomorphological effects of the actions of eolian processes in Oscar II Land (Spitsbergen). [Skutki geomorfologiczne działalności procesów eolicznych na Ziemi Oskara II (Spitsbergen)]

Sinkiewicz, M., XVI Sympozjum Polarne: Dorobek i perspektywy Polskich badań polarnych (16th Polar Symposium: Achievements and Prospects of Polish Polar Research). Edited by A. Olszewski, Toruń, Uniwersytet Mikołaja Kopernika, 1989, p.133-134, In Polish.

DLC G578.S955 1989

Geomorphology, Eolian soils, Tundra, Norway—Spitsbergen

50-2897

"Ice Mountain"—a Pleistocene relict in the north of West Siberia.

Rajamäe, R., Vaikmäe, R., Varvas, M., XVI Sympozjum Polarne: Dorobek i perspektywy Polskich badań polarnych (16th Polar Symposium: Achievements and Prospects of Polish Polar Research). Edited by A. Olszewski, Toruń, Uniwersytet Mikołaja Kopernika, 1989, p.134-135.

DLC G578.S955 1989

Pleistocene, Radioactive age determination, Ground ice, Origin, Glacial geology, Ice composition, Sedimentation, Russia—Siberia

50-2898

Climatic determination of the permafrost active layer in the Hornsund region, SW Spitsbergen. [Klimatyczna determinacja poziomu aktywnego zmarzliny w rejonie Hornsundu, SW Spitsbergen]

Migała, K., XVI Sympozjum Polarne: Dorobek i perspektywy Polskich badań polarnych (16th Polar Symposium: Achievements and Prospects of Polish Polar Research). Edited by A. Olszewski, Toruń, Uniwersytet Mikołaja Kopernika, 1989, p.136-138, In Polish. 3 refs.

DLC G578.S955 1989

Active layer, Permafrost, Climatic factors, Thaw depth, Norway—Spitsbergen

50-2899

Cryogenic movements of soil in Hornsund. [Kriogeniczne ruchy gruntu w Hornsundzie]

Klementowski, J., XVI Sympozjum Polarne: Dorobek i perspektywy Polskich badań polarnych (16th Polar Symposium: Achievements and Prospects of Polish Polar Research). Edited by A. Olszewski, Toruń, Uniwersytet Mikołaja Kopernika, 1989, p.138-141, In Polish. 5 refs.

DLC G578.S955 1989

Cryogenic soils, Soil mechanics, Frozen ground compression, Frozen ground mechanics, Norway—Spitsbergen

50-2900

Processes of the frozen shell of the surface of the quartz grain in the glacier and periglacial environment of Oscar II Land (Spitsbergen). [Procesy mrozowego złuszczania powierzchni ziarn kwarcu w środowisku lodowców i peryglacjalnym ziemi Oskara II (Spitsbergen)]

Kowalkowski, A., Kocoń, J., XVI Sympozjum Polarne: Dorobek i perspektywy Polskich badań polarnych (16th Polar Symposium: Achievements and Prospects of Polish Polar Research). Edited by A. Olszewski, Toruń, Uniwersytet Mikołaja Kopernika, 1989, p.142-145, In Polish.

DLC G578.S955 1989

Glaciers, Periglacial processes, Glacial deposits, Minerals, Norway—Spitsbergen

50-2901

Post-sedimentation frozen structures in Late Pleistocene deposits at the bottom of Gdańsk Bay and their significance to polar research. [O postsedymentacyjnych strukturach mrozowych w osadach późnoplejstoceńskich dna zatoki Gdańskiej i ich znaczeniu dla badań polarnych]

Rosa, B., XVI Sympozjum Polarne: Dorobek i perspektywy Polskich badań polarnych (16th Polar Symposium: Achievements and Prospects of Polish Polar Research). Edited by A. Olszewski, Toruń, Uniwersytet Mikołaja Kopernika, 1989, p.145-148, In Polish. 4 refs.

DLC G578.S955 1989

Sedimentation, Pleistocene, Sediments, Poland—Gdańsk Bay

50-2902

Atmospheric transparency and the stress of direct solar radiation in the Arctic and Antarctic. [Przeźroczystość atmosfery i natężenie bezpośredniego promieniowania słonecznego w Arktyce i na Antarktydzie]

Wójcik, G., XVI Sympozjum Polarne: Dorobek i perspektywy Polskich badań polarnych (16th Polar Symposium: Achievements and Prospects of Polish Polar Research). Edited by A. Olszewski, Toruń, Uniwersytet Mikołaja Kopernika, 1989, p.149-151, In Polish.

DLC G578.S955 1989

Solar radiation, Atmospheric physics, Transparence, Polar atmospheres, Antarctica—Bunger Hills, Norway—Spitsbergen

Atmospheric transparency in the Arctic is less than in the Antarctic due to the higher content of water vapor and a greater contamination of the atmosphere in the Northern Hemisphere with pollutants stemming from highly industrialized regions in the temperate Northern Hemisphere. The daily course of rays on a rectangular area from Spitsbergen and Antarctica (Bunger Hills) as a function of the height of the sun is shown. The stress of radiation and its losses in the atmosphere generated by atmospheric gas molecules, water vapor and aerosols is expressed as a percentage in proportion to the solar constant. At Spitsbergen it was 61%, with 39% losses, whereas in Antarctica it was 71% and 29% respectively, in proportion to the solar constant. (Auth. mod.)

50-2903

Twenty-four hour course of wind velocities and the frequency of its hourly values at Arctowski Station (King George Island, South Shetlands). [Dobowy przebieg prędkości wiatru i częstość jej wartości godzinnych w stacji H. Arctowskiego (Wyspa Króla Jerzego, Szetlandy Pd.)]

Wójcik, G., Marciniak, K., Kejna, K., XVI Sympozjum Polarne: Dorobek i perspektywy Polskich badań polarnych (16th Polar Symposium: Achievements and Prospects of Polish Polar Research). Edited by A. Olszewski, Toruń, Uniwersytet Mikołaja Kopernika, 1989, p.152-155, In Polish.

DLC G578.S955 1989

Wind velocity, Polar atmospheres, Antarctica—Arctowski Station, Antarctica—South Shetland Islands, Antarctica—King George Island

Wind measurements were taken at Arctowski Station between Apr. 1977 and Jan. 1978. The absolute maximum daily wind velocities vary from 17.6 in July to 23.8 miles per hour in November. (Auth. mod.)

50-2904

Twenty-four hour course of wind temperatures at Arctowski Station (King George Island, South Shetlands). [Dobowy przebieg temperatury powietrza w stacji H. Arctowskiego (Wyspa Króla Jerzego, Szetlandy Pd.)]

Wójcik, G., Marciniak, K., Morel, H., XVI Sympozjum Polarne: Dorobek i perspektywy Polskich badań polarnych (16th Polar Symposium: Achievements and Prospects of Polish Polar Research). Edited by A. Olszewski, Toruń, Uniwersytet Mikołaja Kopernika, 1989, p.155-158, In Polish.

DLC G578.S955 1989

Air temperature, Polar atmospheres, Temperature gradients, Antarctica—Arctowski Station, Antarctica—South Shetland Islands

Wind temperature measurements were taken at Arctowski Station between Apr. 1977 and Mar. 1978. Maxima most often occurred during night hours with the most (23%) between 24:00 and 1:00. The second level of maxima occurred during daytime hours, between 13:00 and 15:00 (11.6%) and 11:00-13:00 (11%). This proves that, under those climatic conditions, the dynamic factor (circulation) has a greater effect on maximum daily temperatures than the solar factor. (Auth. mod.)

50-2905

Effect of atmospheric circulation on the formation of clouds in Hornsund. [Wpływ cyrkulacji atmosferycznej na kształtowanie się zachmurzenia w Hornsundzie]

Niedźwiedź, T., Ustrnul, Z., XVI Sympozjum Polarne: Dorobek i perspektywy Polskich badań polarnych (16th Polar Symposium: Achievements and Prospects of Polish Polar Research). Edited by A. Olszewski, Toruń, Uniwersytet Mikołaja Kopernika, 1989, p.158-160, In Polish.

DLC G578.S955 1989

Atmospheric circulation, Cloud cover, Clouds (meteorology), Polar atmospheres, Norway—Spitsbergen

50-2906

Differentiation of three-dimensional temperatures and atmospheric humidity during the course of a year on the west coast of Spitsbergen. [Zróżnicowanie przestrsenne temperatury i wilgotności powietrza w przebiegu rocznym na zachodnim wybrzeżu Spitsbergenu]

Przybylak, R., XVI Sympozjum Polarne: Dorobek i perspektywy Polskich badań polarnych (16th Polar Symposium: Achievements and Prospects of Polish Polar Research). Edited by A. Olszewski, Toruń, Uniwersytet Mikołaja Kopernika, 1989, p.161-163, In Polish.

DLC G578.S955 1989

Air temperature, Humidity, Polar atmospheres, Temperature gradients, Norway—Spitsbergen

50-2907

Climatic conditions of East Grønfjord Glacier.

Brázdil, R., Prošek, P., XVI Sympozjum Polarne: Dorobek i perspektywy Polskich badań polarnych (16th Polar Symposium: Achievements and Prospects of Polish Polar Research). Edited by A. Olszewski, Toruń, Uniwersytet Mikołaja Kopernika, 1989, p.163-165, 1 ref.

DLC G578.S955 1989

Glaciers, Climatic factors, Temperature gradients, Norway—Spitsbergen

50-2908

Potential for using wind energy on Hornsund. [Możliwość wykorzystania energii wiatru w Hornsundzie]

Skrzypczak, E., XVI Sympozjum Polarne: Dorobek i perspektywy Polskich badań polarnych (16th Polar Symposium: Achievements and Prospects of Polish Polar Research). Edited by A. Olszewski, Toruń, Uniwersytet Mikołaja Kopernika, 1989, p.166-170, In Polish. 4 refs.

DLC G578.S955 1989

Wind power generation, Polar atmospheres, Wind velocity, Wind direction, Norway—Spitsbergen

50-2909

Differentiation of temperature and water vapor pressure during the summer season between the Kaffiöyra Plain and Waldemar Glacier (NW Spitsbergen). [Zróżnicowanie temperatury i prężności pary wodnej w sezonie letnim pomiędzy Równiną Kaffiöyra i Lodowcem Waldemara (NW Spitsbergen)]

Wójcik, G., Marciniak, K., Przybylak, R., Kejna, M., XVI Sympozjum Polarne: Dorobek i perspektywy Polskich badań polarnych (16th Polar Symposium: Achievements and Prospects of Polish Polar Research). Edited by A. Olszewski, Toruń, Uniwersytet Mikołaja Kopernika, 1989, p.170-172, In Polish. 2 refs.

DLC G578.S955 1989

Temperature gradients, Water vapor, Vapor pressure, Air temperature, Wind velocity, Precipitation (meteorology), Climatic factors, Norway—Spitsbergen

50-2910

Thermal differentiation in slopes of a small periglacial valley (Bellsund, Spitsbergen). [Zróżnicowanie termiczne zboczy dolinki peryglacjalnej (Bellsund, Spitsbergen)]

Łanczont, M., Rodzik, J., XVI Sympozjum Polarne: Dorobek i perspektywy Polskich badań polarnych (16th Polar Symposium: Achievements and Prospects of Polish Polar Research). Edited by A. Olszewski, Toruń, Uniwersytet Mikołaja Kopernika, 1989, p.173-175, In Polish. 1 ref.

DLC G578.S955 1989

Valleys, Slopes, Periglacial processes, Cloud cover, Air temperature, Norway—Spitsbergen

50-2911

Foehn winds on Kaffiöyra (NW Spitsbergen) against a background of general atmospheric circulation during the summer of 1985. [Wiatry fenowe na Kaffiöyra (NW Spitsbergen) na tle ogólnej cyrkulacji atmosfery w lecie 1985 roku]

Kejna, M., XVI Sympozjum Polarne: Dorobek i perspektywy Polskich badań polarnych (16th Polar Symposium: Achievements and Prospects of Polish Polar Research). Edited by A. Olszewski, Toruń, Uniwersytet Mikołaja Kopernika, 1989, p.175-178, In Polish. 4 refs.

DLC G578.S955 1989

Wind (meteorology), Atmospheric circulation, Polar atmospheres, Wind velocity, Wind direction, Cloud cover, Humidity, Norway—Spitsbergen

50-2912

Sea-breeze winds in Kaffiöyra (NW Spitsbergen) in the summer of 1985. [Wiatry bryzowe na Kaffiöyra (NW Spitsbergen) w lecie 1985 roku]

Kejna, M., XVI Sympozjum Polarne: Dorobek i perspektywy Polskich badań polarnych (16th Polar Symposium: Achievements and Prospects of Polish Polar Research). Edited by A. Olszewski, Toruń, Uniwersytet Mikołaja Kopernika, 1989, p.179-182, In Polish. 3 refs.

DLC G578.S955 1989

Wind (meteorology), Polar atmospheres, Wind direction, Wind velocity, Humidity, Norway—Spitsbergen

50-2913

Isotopic studies on glaciers of the Institute of Geology, Estonian Academy of Sciences, on Spitsbergen.

Martma, T., Punning, J.M., Vaikmäe, R., XVI Sympozjum Polarne: Dorobek i perspektywy Polskich badań polarnych (16th Polar Symposium: Achievements and Prospects of Polish Polar Research). Edited by A. Olszewski, Toruń, Uniwersytet Mikołaja Kopernika, 1989, p.182-184.

DLC G578.S955 1989

Isotope analysis, Isotopes, Research projects, Glaciers, Norway—Spitsbergen

50-2914

Effect of extreme weather conditions on hydrological phenomena, for example selected rivers in the Kaffiöyra region (NW Spitsbergen). [Wpływ ekstremalnych warunków pogodowych na zjawiska hydrologiczne na przykładzie wybranych rzek z regionu Kaffiöyry (NW Spitsbergen)]

Szczepanik, W., Marciniak, K., XVI Sympozjum Polarne: Dorobek i perspektywy Polskich badań polarnych (16th Polar Symposium: Achievements and Prospects of Polish Polar Research). Edited by A. Olszewski, Toruń, Uniwersytet Mikołaja Kopernika, 1989, p.185-188, In Polish.

DLC G578.S955 1989

Climatic factors, Hydrology, Rivers, Glacial hydrology, Geomorphology, Norway—Spitsbergen

50-2915

Preliminary results from research on proglacial outwash in the summer season, in the example of the Eliza River (NW Spitsbergen). [Wstępne wyniki badań odpływu proglacjalnego w sezonie letnim na przykładzie rzeki Elizy (NW Spitsbergen)]

Marciniak, K., Marszelewski, W., Szczepanik, W., Sendobry, K., XVI Sympozjum Polarne: Dorobek i perspektywy Polskich badań polarnych (16th Polar Symposium: Achievements and Prospects of Polish Polar Research). Edited by A. Olszewski, Toruń, Uniwersytet Mikołaja Kopernika, 1989, p.188-190, In Polish.

DLC G578.S955 1989

Outwash, Glacial rivers, Glacier ablation, River flow, Glacial hydrology, Norway—Spitsbergen, Norway—Eliza River

50-2916

Transport dynamics of material carried in the Waldemar River in Spitsbergen during the 1985 summer season. [Dynamika transportu materiału unoszonego w rzece Waldemara na Spitsbergenie w sezonie letnim 1985]

Pietrucień, C., Skowron, R., XVI Sympozjum Polarne: Dorobek i perspektywy Polskich badań polarnych (16th Polar Symposium: Achievements and Prospects of Polish Polar Research). Edited by A. Olszewski, Toruń, Uniwersytet Mikołaja Kopernika, 1989, p.191-195, In Polish.

DLC G578.S955 1989

Glacial rivers, River flow, Alluvium, Air temperature, Norway—Spitsbergen, Norway—Waldemar River

50-2917

Research on the concentration of suspended matter in the rivers of Kaffiöyry (NW Spitsbergen). [Badania koncentracji zawiesiny w rzekach Kaffiöyry (NW Spitsbergen)]

Pietrucień, C., Skowron, R., Szczepanik, W., XVI Sympozjum Polarne: Dorobek i perspektywy Polskich badań polarnych (16th Polar Symposium: Achievements and Prospects of Polish Polar Research). Edited by A. Olszewski, Toruń, Uniwersytet Mikołaja Kopernika, 1989, p.196-200, In Polish.

DLC G578.S955 1989

Suspended sediments, Rivers, Glacial rivers, Ablation, Hydrology, Norway—Spitsbergen

50-2918

Effect of the conditions of the geographic environment on the occurrence of surface waters from a terraced tundra plain (in the example of Kaffiöyra, Oscar II Land, NW Spitsbergen). [Wpływ warunków środowiska geograficznego na występowanie wód powierzchniowych sterasowanej równiny tundrowej (na przykładzie Kaffiöyry, Ziemia Oscara II, NW Spitsbergen)]

Szczepanik, W., XVI Sympozjum Polarne: Dorobek i perspektywy Polskich badań polarnych (16th Polar Symposium: Achievements and Prospects of Polish Polar Research). Edited by A. Olszewski, Toruń, Uniwersytet Mikołaja Kopernika, 1989, p.201-203, In Polish.

DLC G578.S955 1989

Surface waters, Tundra terrain, Terraces, Geography, Hydrology, Lakes, Ablation, River basins, Snowmelt, Glacier melting, Norway—Spitsbergen

50-2919

Hydrological problems in the Ebba Basin and Petunia Gulf (Central Spitsbergen). [Zagadnienia hydrologiczne zlewni Ebby i Zatoki Petunia (Środkowy Spitsbergen)]

Choiński, A., XVI Sympozjum Polarne: Dorobek i perspektywy Polskich badań polarnych (16th Polar Symposium: Achievements and Prospects of Polish Polar Research). Edited by A. Olszewski, Toruń, Uniwersytet Mikołaja Kopernika, 1989, p.203-204, In Polish.

DLC G578.S955 1989

River basins, Isotherms, Water temperature, Temperature gradients, Norway—Spitsbergen

50-2920

Research on the internal drainage of the Werenskiold and Torell glaciers (SW Spitsbergen) in the 1988 summer season. [Výzkum vnitřního odvodňování ledovcu Werenskiold a Torell (Spicberky) v letní sezoně roku 1988]

Rehák, J., Ouhrabka, V., Braun, J., XVI Sympozjum Polarne: Dorobek i perspektywy Polskich badań polarnych (16th Polar Symposium: Achievements and Prospects of Polish Polar Research). Edited by A. Olszewski, Toruń, Uniwersytet Mikołaja Kopernika, 1989, p.205-209, In Czech with English summary. 7 refs.

DLC G578.S955 1989

Glaciers, Subglacial drainage, Ice caves, Wells, Norway—Spitsbergen

50-2921

Outflow from the basin of the glacial river of the Werenskiold Glacier and the unfrozen stream from Fuglebekken (Spitsbergen) during the 1988 summer and spring season. [Odpływ ze zlewni zlodowaconej rzeki lodowcowej Werenskiolda i niezlodowaconej potoku Fuglebekken (Spitsbergen) w okresie lata i jesieni 1988 roku]

Leszkiewicz, J., Rehák, J., XVI Sympozjum Polarne: Dorobek i perspektywy Polskich badań polarnych (16th Polar Symposium: Achievements and Prospects of Polish Polar Research). Edited by A. Olszewski, Toruń, Uniwersytet Mikołaja Kopernika, 1989, p.209-211, In Polish.

DLC G578.S955 1989

Glaciers, Streams, Glacial rivers, Glacial hydrology, River basins, River flow, Norway—Spitsbergen

50-2922

Thermal Orvin spring below Mount Gnälberget (Hornsund, Spitsbergen).

Pociask-Karteczka, J., XVI Sympozjum Polarne: Dorobek i perspektywy Polskich badań polarnych (16th Polar Symposium: Achievements and Prospects of Polish Polar Research). Edited by A. Olszewski, Toruń, Uniwersytet Mikołaja Kopernika, 1989, p.211-213.

DLC G578.S955 1989

Springs (water), Hydrology, Surface waters, Minerals, Norway—Spitsbergen

50-2923

Level of biomass and chlorophyll content of the plant communities in the area of the Polish Academy of Sciences station Arctowski, King George Island. [Stan biomasy i zawartości chlorofilu w zbiorowiskach roślinnych okolic stacji PAN im. H. Arctowskiego, Wyspa Króla Jerzego]

Barcikowski, A., Oleksowicz, A., XVI Sympozjum Polarne: Dorobek i perspektywy Polskich badań polarnych (16th Polar Symposium: Achievements and Prospects of Polish Polar Research). Edited by A. Olszewski, Toruń, Uniwersytet Mikołaja Kopernika, 1989, p.215-217, In Polish.

DLC G578.S955 1989

Plants (botany), Biomass, Chlorophylls, Antarctica—Arctowski Station

The level of general biomass varied greatly, from 60 to 1527.8 g dry mass/m^2. The lowest biomass was ascertained in fresh water communities and in a locality damaged by trampling. The highest biomass was found in *Usnea antarctica* communities. On the other hand, the highest level of animal biomass was recorded in *Drepanocladus uncinatus* and *Calliergon sarmentosum* communities, while the highest biomass level in vegetation was in *Deschampsia antarctica*, *Polytrichum alpinum*, and *Drepanocladus uncinatus* communities. The indicator of chlorophyll in the analyzed communities ranged from 0.33-2.73 g/m^2. The highest and lowest chlorophyll values were correlated with the vegetation biomass levels. (Auth. mod.)

50-2924

Role of the varieties of the *Mniaceae* family in tundra communities in the southeastern coast of Bellsund (Western Spitsbergen). [Udział gatunków rodziny Mniaceae w zbiorowiskach tundry na południowo-wschodnim wybrzeżu Bellsundu (Spitsbergen Zachodni)]

Karczmarz, K., Święs, F., XVI Sympozjum Polarne: Dorobek i perspektywy Polskich badań polarnych (16th Polar Symposium: Achievements and Prospects of Polish Polar Research). Edited by A. Olszewski, Toruń, Uniwersytet Mikołaja Kopernika, 1989, p.217-220, In Polish. 8 refs.

DLC G578.S955 1989

Tundra vegetation, Plants (botany), Site surveys, Norway—Spitsbergen

50-2925

Bacterial population in mineral soils from Antarctica and its relations to organic nutrients.

Bölter, M., XVI Sympozjum Polarne: Dorobek i perspektywy Polskich badań polarnych (16th Polar Symposium: Achievements and Prospects of Polish Polar Research). Edited by A. Olszewski, Toruń, Uniwersytet Mikołaja Kopernika, 1989, p.220-221.

DLC G578.S955 1989

Soil microbiology, Minerals, Ecosystems, Bacteria, Biomass, Antarctica—Casey Station

This investigation took place in summer 1985-1986 in the fellfield ecosystem near Casey Station. The bacterial population structure showed a dominance of bacteria of the size class of small rods with regard to biomass and to small cocci with regard to total number. Estimates of microbial biomass exceed that of bacteria by a factor of 1000 or more. Hence, other organisms like fungi and microalgae have to be considered as main constituents of the microbial biomass in these soils. (Auth. mod.)

50-2926

Freshwater net zooplankton of Spitsbergen.

Terek, J., Kubíček, F., XVI Sympozjum Polarne: Dorobek i perspektywy Polskich badań polarnych (16th Polar Symposium: Achievements and Prospects of Polish Polar Research). Edited by A. Olszewski, Toruń, Uniwersytet Mikołaja Kopernika, 1989, p.221-224.

DLC G578.S955 1989

Plankton, Marine biology, Norway—Spitsbergen

50-2927

Occurrence of net phytoplankton in the sea and ice boundary between Elephant Island and the southern passages (Antarctica 1988-1989). [Występowanie fitoplanktonu sieciowego na granicy morza i lodu pomiędzy wyspą Elephant i południowymi arkadami (Antarktyka 1988/1989)]

Kopczyńska, E.E., Ligowski, R., XVI Sympozjum Polarne: Dorobek i perspektywy Polskich badań polarnych (16th Polar Symposium: Achievements and Prospects of Polish Polar Research). Edited by A. Olszewski, Toruń, Uniwersytet Mikołaja Kopernika, 1989, p.224-226, In Polish. 3 refs.

DLC G578.S955 1989

Plankton, Marine biology, Algae, Sea ice, Pack ice, Antarctica—Elephant Island

A collection of net phytoplankton was obtained from the surface layer of water (from 0 to 100 m). Among the approximately 30 species of diatoms identified, *Corethron criophilum* dominated. Generally, the species found in the net phytoplankton were different from those which occurred at the same time in the pack ice. (Auth. mod.)

50-2928

Algae populating drifting sea ice in Antarctica. [Glony zasiedlające dryfujący lód morski w Antarktyce]

Ligowski, R., XVI Sympozjum Polarne: Dorobek i perspektywy Polskich badań polarnych (16th Polar Symposium: Achievements and Prospects of Polish Polar Research). Edited by A. Olszewski, Toruń, Uniwersytet Mikołaja Kopernika, 1989, p.226-227, In Polish.

DLC G578.S955 1989

Algae, Sea ice, Marine biology, —Scotia Sea, Antarctica—South Shetland Islands, Antarctica—South Orkney Islands

The investigations took place in Dec. 1988 and Jan. 1989 in the area of the Scotia Sea between the South Shetlands and South Orkney Islands. The types that dominated in the sea ice from the genus Nitzschia were primarily *N. cylindrus* and *N. ourta;* more rarely, *N. neglecta, N. sublineata,* and *N. lecointei.* (Auth. mod.)

50-2929

100th anniversary of the Nansen expedition (1888-1989)—first passage through the Greenland ice sheet. [100-lecie wyprawy Nansena (1888-1989)—pierwszego przejścia lądolodu Grenlandii]

Matalewski, S., XVI Sympozjum Polarne: Dorobek i perspektywy Polskich badań polarnych (16th Polar Symposium: Achievements and Prospects of Polish Polar Research). Edited by A. Olszewski, Toruń, Uniwersytet Mikołaja Kopernika, 1989, p.244-246, In Polish. 6 refs.

DLC G578.S955 1989

Expeditions, History, Greenland

50-2930

Exploration of the Arctic Ocean by means of floating scientific stations.

Männik, R., XVI Sympozjum Polarne: Dorobek i perspektywy Polskich badań polarnych (16th Polar Symposium: Achievements and Prospects of Polish Polar Research). Edited by A. Olszewski, Toruń, Uniwersytet Mikołaja Kopernika, 1989, p.246-248.

DLC G578.S955 1989

Ice islands, Pack ice, Sea ice, Drift, Arctic Ocean

50-2931

Bioclimatic conditions in the region of Arctowski Station during the summer period. [Warunki bioklimatyczne w rejonie stacji Arctowskiego w okresie lata]

Styszyńska, A., XVI Sympozjum Polarne: Dorobek i perspektywy Polskich badań polarnych (16th Polar Symposium: Achievements and Prospects of Polish Polar Research). Edited by A. Olszewski, Toruń, Uniwersytet Mikołaja Kopernika, 1989, p.248-250, In Polish.

DLC G578.S955 1989

Wind velocity, Air temperature, Climate, Climatic factors, Antarctica—Arctowski Station

Observations dealing with pressure, temperature, air humidity and wind velocity, conducted at Arctowski Station in 1978-1987, were utilized. Analysis was carried out for 8 periods during the course of twenty-four hours in November-March. Variation in the wind chill during the course of twenty-four hours was not greater than 100 kcal/m^2h; between days, the variation in the wind chill amounted to (on average) 180 kcal/m^2h, increased especially in March, and sporadically amounted to 380-410 kcal/m^2h. (Auth. mod.)

50-2932

Exploitation of mineral resources in Antarctica. [Eksploatacja zasobów mineralnych Antarktyki]

Machowski, J., XVI Sympozjum Polarne: Dorobek i perspektywy Polskich badań polarnych (16th Polar Symposium: Achievements and Prospects of Polish Polar Research). Edited by A. Olszewski, Toruń, Uniwersytet Mikołaja Kopernika, 1989, p.264-266, In Polish. 10 refs.

DLC G578.S955 1989

Natural resources, Minerals, Legislation, International cooperation, Antarctica

A brief overview of the convention regulating the exploration and exploitation of mineral resources in Antarctica is presented. It is predicted that exploitation of antarctic resources will not occur before the end of the century.

50-2933

Establishment and measurement of an outlet of a geodynamic polygon around the Hornsund fiord in Spitsbergen. [Założenie i pomiar wyjściowy poligonu geodynamicznego wokół fiordu Hornsund na Spitsbergenie]

Pachuta, A., Osuch, D., XVI Sympozjum Polarne: Dorobek i perspektywy Polskich badań polarnych (16th Polar Symposium: Achievements and Prospects of Polish Polar Research). Edited by A. Olszewski, Toruń, Uniwersytet Mikołaja Kopernika, 1989, p.267-268, In Polish.

DLC G578.S955 1989

Measurement, Tectonics, Earth crust, Norway—Spitsbergen

50-2934

10th anniversary of the Polar Research Documents Workshop. [Dziesięć lat Pracowni Dokumentacji Badań Polarnych]

Krawczyk, A., XVI Sympozjum Polarne: Dorobek i perspektywy Polskich badań polarnych (16th Polar Symposium: Achievements and Prospects of Polish Polar Research). Edited by A. Olszewski, Toruń, Uniwersytet Mikołaja Kopernika, 1989, p.268-269, In Polish.

DLC G578.S955 1989

History, Organizations, Research projects

50-2935

Proceedings. Volume IV. Arctic/polar technology.

International Conference on Offshore Mechanics and Arctic Engineering (OMAE), 14th, Copenhagen, Denmark, June 18-22, 1995, Nixon, W.A., ed, Sodhi, D.S., ed, Sinha, N.K., ed, Christensen, F.T., ed, MP 3765, New York, American Society of Mechanical Engineers, 1995, 289p., Refs. passim. For individual papers see 50-2935 through 50-2975.

Ice solid interface, Ice cover strength, Ice loads, Ice pressure, Ice friction, Ice deformation, Ice cracks, Ice breaking, Ice accretion, Offshore structures, Offshore drilling, Economic development

50-2936

Static and dynamic analysis of the ice-structure interaction under the slippage boundary conditions.

Matskevich, D.G., International Conference on Offshore Mechanics and Arctic Engineering (OMAE), 14th, Copenhagen, Denmark, June 18-22, 1995. Proceedings. Vol.4. Edited by W.A. Nixon, D.S. Sodhi, N.K. Sinha and F.T. Christensen, New York, American Society of Mechanical Engineers, 1995, p.1-8, 9 refs.

Offshore structures, Ice solid interface, Ice loads, Ice pressure, Ice friction, Ice cover strength, Ice deformation, Ice breaking, Computerized simulation, Mathematical models

50-2937

1995 perspective on global design ice loads.

Kennedy, K.P., International Conference on Offshore Mechanics and Arctic Engineering (OMAE), 14th, Copenhagen, Denmark, June 18-22, 1995. Proceedings. Vol.4. Edited by W.A. Nixon, D.S. Sodhi, N.K. Sinha and F.T. Christensen, New York, American Society of Mechanical Engineers, 1995, p.9-16, 15 refs.

Offshore structures, Ice solid interface, Ice loads, Ice pressure, Ice cover strength, Ice deformation, Beaufort Sea, Russia—Pechora Sea

50-2938

Study of multi-scale deformation and failure of ice cover at interaction with ice-resistant structure.

Danilenko, V.I., Gol'dshtein, R.V., Osipenko, N.M., International Conference on Offshore Mechanics and Arctic Engineering (OMAE), 14th, Copenhagen, Denmark, June 18-22, 1995. Proceedings. Vol.4. Edited by W.A. Nixon, D.S. Sodhi, N.K. Sinha and F.T. Christensen, New York, American Society of Mechanical Engineers, 1995, p.17-20, 7 refs.

Offshore structures, Ice solid interface, Ice loads, Ice pressure, Ice friction, Ice cover strength, Ice deformation, Ice breaking

50-2939

Breakthrough loads of floating ice sheets: small-scale tests with urea model ice.

Sodhi, D.S., MP 3764, International Conference on Offshore Mechanics and Arctic Engineering (OMAE), 14th, Copenhagen, Denmark, June 18-22, 1995. Proceedings. Vol.4. Edited by W.A. Nixon, D.S. Sodhi, N.K. Sinha and F.T. Christensen, New York, American Society of Mechanical Engineers, 1995, p.21-27, 11 refs.

Ice floes, Ice cover strength, Ice solid interface, Ice loads, Ice deformation, Ice breaking, Penetration tests, Environmental tests

At present, ice breakthrough load is estimated using empirical relations developed from the results of full-scale field experiments. In this paper, a theoretical formulation is presented to obtain an upper-bound estimate of the breakthrough load using the yield line method for plates. Small-scale experiments were conducted by vertically loading urea model ice in the basin at the CRREL laboratory to obtain the breakthrough loads for floating ice. The results of the following series of experiments are presented: (1) for beams with fixed ends, and (b) for floating ice sheets with fixed and free boundaries. The breakthrough loads measured in this study are presented with respect to ice thickness. These results are then compared with the breakthrough loads of freshwater floating ice sheets measured during full-scale and small-scall experiments.

50-2940

High frequency acoustic response of sea ice to single load cycles: a preliminary analysis.

Langhorne, P.J., Haskell, T.G., International Conference on Offshore Mechanics and Arctic Engineering (OMAE), 14th, Copenhagen, Denmark, June 18-22, 1995. Proceedings. Vol.4. Edited by W.A. Nixon, D.S. Sodhi, N.K. Sinha and F.T. Christensen, New York, American Society of Mechanical Engineers, 1995, p.29-34, 30 refs.

Sea ice, Ice cover strength, Ice loads, Ice pressure, Ice deformation, Ice creep, Ice cracks, Ice acoustics

50-2941

Effects of ice blockage size and proximity on propeller performance during non-contact propeller-ice interaction.

Luznik, L., Walker, D., Bose, N., Jones, S.J., International Conference on Offshore Mechanics and Arctic Engineering (OMAE), 14th, Copenhagen, Denmark, June 18-22, 1995. Proceedings. Vol.4. Edited by W.A. Nixon, D.S. Sodhi, N.K. Sinha and F.T. Christensen, New York, American Society of Mechanical Engineers, 1995, p.35-39, 9 refs.

Icebreakers, Propellers, Ice solid interface, Ice navigation, Metal ice friction, Ice loads, Hydrodynamics, Cavitation

50-2942

Ice-structure dynamic interaction: failure ice model.

Bekker, A.T., International Conference on Offshore Mechanics and Arctic Engineering (OMAE), 14th, Copenhagen, Denmark, June 18-22, 1995. Proceedings. Vol.4. Edited by W.A. Nixon, D.S. Sodhi, N.K. Sinha and F.T. Christensen, New York, American Society of Mechanical Engineers, 1995, p.41-45, 7 refs. For another source see 50-195.

Offshore structures, Ice solid interface, Ice loads, Ice pressure, Ice friction, Ice cover strength, Ice deformation, Ice breaking, Mathematical models

50-2943

Effects of prestressing on floating ice sheets.

Quimby, T.B., Nelson, W.G., International Conference on Offshore Mechanics and Arctic Engineering (OMAE), 14th, Copenhagen, Denmark, June 18-22, 1995. Proceedings. Vol.4. Edited by W.A. Nixon, D.S. Sodhi, N.K. Sinha and F.T. Christensen, New York, American Society of Mechanical Engineers, 1995, p.47-52, 7 refs.

Ice floes, Ice (construction material), Ice cover strength, Ice loads, Bearing strength

50-2944

Sea ice formation in Cook Inlet Alaska: a high energy environment.

Nelson, W.G., International Conference on Offshore Mechanics and Arctic Engineering (OMAE), 14th, Copenhagen, Denmark, June 18-22, 1995. Proceedings. Vol.4. Edited by W.A. Nixon, D.S. Sodhi, N.K. Sinha and F.T. Christensen, New York, American Society of Mechanical Engineers, 1995, p.53-59, 16 refs.

Sea water freezing, Ice formation, Ice growth, Fast ice, Grounded ice, Ice adhesion, Ice accretion, Ice solid interface, Piles, United States—Alaska—Cook Inlet

50-2945

On deflecting drifting icebergs.

Rieß, I.R., Fanneløp, T.K., International Conference on Offshore Mechanics and Arctic Engineering (OMAE), 14th, Copenhagen, Denmark, June 18-22, 1995. Proceedings. Vol.4. Edited by W.A. Nixon, D.S. Sodhi, N.K. Sinha and F.T. Christensen, New York, American Society of Mechanical Engineers, 1995, p.61-66, 9 refs.

Offshore structures, Icebergs, Drift, Ice control, Bubbling, Hydrodynamics

50-2946

Self-excited oscillations in ice floes and icebergs.

Smirnov, V.N., Korostelev, V.G., Stepanov, I.V., International Conference on Offshore Mechanics and Arctic Engineering (OMAE), 14th, Copenhagen, Denmark, June 18-22, 1995. Proceedings. Vol.4. Edited by W.A. Nixon, D.S. Sodhi, N.K. Sinha and F.T. Christensen, New York, American Society of Mechanical Engineers, 1995, p.67-73, 8 refs.

Ice floes, Icebergs, Ice cover strength, Ice loads, Ice pressure, Ice friction, Ice water interface, Ice deformation, Ice cracks, Ocean waves, Elastic waves

50-2947

Quantification of the reliability of iceberg management off eastern Canada.

Goodridge, D.N., Bishop, G.P., International Conference on Offshore Mechanics and Arctic Engineering (OMAE), 14th, Copenhagen, Denmark, June 18-22, 1995. Proceedings. Vol.4. Edited by W.A. Nixon, D.S. Sodhi, N.K. Sinha and F.T. Christensen, New York, American Society of Mechanical Engineers, 1995, p.75-80, 4 refs.

Icebergs, Drift, Ice control, Iceberg towing, Offshore drilling, Canada—Newfoundland—Grand Banks, Labrador Sea

50-2948

Model of mesoscale motions of ice caused by convective flows.

Gol'dshteĭn, R.V., Osipenko, N.M., International Conference on Offshore Mechanics and Arctic Engineering (OMAE), 14th, Copenhagen, Denmark, June 18-22, 1995. Proceedings. Vol.4. Edited by W.A. Nixon, D.S. Sodhi, N.K. Sinha and F.T. Christensen, New York, American Society of Mechanical Engineers, 1995, p.81-84, 13 refs.

Ice floes, Drift, Ice cover strength, Ice deformation, Ice loads, Ice friction, Ice water interface, Ice heat flux, Ice models, Convection

50-2949

Surface wave diffraction at a system of cracks in the ice cover.

Gol'dshteĭn, R.V., Marchenko, A.V., International Conference on Offshore Mechanics and Arctic Engineering (OMAE), 14th, Copenhagen, Denmark, June 18-22, 1995. Proceedings. Vol.4. Edited by W.A. Nixon, D.S. Sodhi, N.K. Sinha and F.T. Christensen, New York, American Society of Mechanical Engineers, 1995, p.85-86, 3 refs.

Ice cover strength, Ice elasticity, Ice deformation, Ice cracks, Ice water interface, Ocean waves, Wave propagation

50-2950

On the volume-viscous behavior of snow.

Mahrenholtz, O., Meussen, B., International Conference on Offshore Mechanics and Arctic Engineering (OMAE), 14th, Copenhagen, Denmark, June 18-22, 1995. Proceedings. Vol.4. Edited by W.A. Nixon, D.S. Sodhi, N.K. Sinha and F.T. Christensen, New York, American Society of Mechanical Engineers, 1995, p.87-91, 14 refs.

Snow cover structure, Snow strength, Snow loads, Snow compression, Snow deformation, Snow creep, Mathematical models

50-2951

Comparison of glaze and in-cloud icing events on a test line.

Druez, J., McComber, P., Laflamme, J., International Conference on Offshore Mechanics and Arctic Engineering (OMAE), 14th, Copenhagen, Denmark, June 18-22, 1995. Proceedings. Vol.4. Edited by W.A. Nixon, D.S. Sodhi, N.K. Sinha and F.T. Christensen, New York, American Society of Mechanical Engineers, 1995, p.93-100, 13 refs.

Power line icing, Ice accretion, Ice loads, Glaze, Ice storms, Ice melting, Ice breaking, Wind pressure, Canada—Quebec

50-2952

Simulation of sea ice behaviour—a parametric study.

Evgin, E., Zhan, C.Z., Sinha, N.K., International Conference on Offshore Mechanics and Arctic Engineering (OMAE), 14th, Copenhagen, Denmark, June 18-22, 1995. Proceedings. Vol.4. Edited by W.A. Nixon, D.S. Sodhi, N.K. Sinha and F.T. Christensen, New York, American Society of Mechanical Engineers, 1995, p.101-105, 20 refs.

Ice structure, Ice cover strength, Ice loads, Ice pressure, Ice elasticity, Ice deformation, Ice cracks, Ice models, Computerized simulation

50-2953

Mechanical behavior of ice loaded optical ground wires.

Savadjiev, K., McComber, P., International Conference on Offshore Mechanics and Arctic Engineering (OMAE), 14th, Copenhagen, Denmark, June 18-22, 1995. Proceedings. Vol.4. Edited by W.A. Nixon, D.S. Sodhi, N.K. Sinha and F.T. Christensen, New York, American Society of Mechanical Engineers, 1995, p.107-113, 14 refs.

Power line icing, Ice accretion, Ice loads, Electrical grounding

50-2954

Influence of the surface liquid film on cylinder icing under marine conditions.

Lozowski, E.P., Kobos, A.M., Kachurin, L.G., International Conference on Offshore Mechanics and Arctic Engineering (OMAE), 14th, Copenhagen, Denmark, June 18-22, 1995. Proceedings. Vol.4. Edited by W.A. Nixon, D.S. Sodhi, N.K. Sinha and F.T. Christensen, New York, American Society of Mechanical Engineers, 1995, p.115-122, 17 refs.

Ice solid interface, Ice water interface, Ice formation, Ice accretion, Icing rate, Ice forecasting, Glaze, Cloud droplets, Water films

50-2955

Model for spraying and three-dimensional icing on a stern trawler.

Chung, K.K., Lozowski, E.P., Zakrzewski, W.P., Thompson, T., Gagnon, R., International Conference on Offshore Mechanics and Arctic Engineering (OMAE), 14th, Copenhagen, Denmark, June 18-22, 1995. Proceedings. Vol.4. Edited by W.A. Nixon, D.S. Sodhi, N.K. Sinha and F.T. Christensen, New York, American Society of Mechanical Engineers, 1995, p.123-130, 17 refs.

Ship icing, Ice solid interface, Ice accretion, Ice loads, Ice forecasting, Sea spray, Ocean waves, Wind factors, Mathematical models

50-2956

Freezing of a salt solution in a packed bed.

Chellaiah, S., Singh, H., International Conference on Offshore Mechanics and Arctic Engineering (OMAE), 14th, Copenhagen, Denmark, June 18-22, 1995. Proceedings. Vol.4. Edited by W.A. Nixon, D.S. Sodhi, N.K. Sinha and F.T. Christensen, New York, American Society of Mechanical Engineers, 1995, p.131-138, 20 refs.

Frozen liquids, Artificial freezing, Ice formation, Freezing front, Salt water, Liquid solid interfaces, Solidification, Phase transformations

50-2957

Preliminary results on the ductile deformation of columnar saline ice under triaxial compressive loading.

Melton, J.S., Schulson, E.M., International Conference on Offshore Mechanics and Arctic Engineering (OMAE), 14th, Copenhagen, Denmark, June 18-22, 1995. Proceedings. Vol.4. Edited by W.A. Nixon, D.S. Sodhi, N.K. Sinha and F.T. Christensen, New York, American Society of Mechanical Engineers, 1995, p.139-143, 10 refs.

Salt ice, Ice cover strength, Ice plasticity, Ice loads, Ice pressure, Ice deformation, Plastic deformation

50-2958

Crack nucleation in columnar ice—recent developments.

Gupta, V., Picu, R.C., International Conference on Offshore Mechanics and Arctic Engineering (OMAE), 14th, Copenhagen, Denmark, June 18-22, 1995. Proceedings. Vol.4. Edited by W.A. Nixon, D.S. Sodhi, N.K. Sinha and F.T. Christensen, New York, American Society of Mechanical Engineers, 1995, p.145-150, 15 refs.

Ice strength, Ice deformation, Ice loads, Ice pressure, Ice elasticity, Ice cracks, Crack propagation

50-2959

Preliminary results of ice-aluminum interfacial fracture toughness testing.

Whelan, A.E., Nixon, W.A., International Conference on Offshore Mechanics and Arctic Engineering (OMAE), 14th, Copenhagen, Denmark, June 18-22, 1995. Proceedings. Vol.4. Edited by W.A. Nixon, D.S. Sodhi, N.K. Sinha and F.T. Christensen, New York, American Society of Mechanical Engineers, 1995, p.151-157, 36 refs.

Ice solid interface, Ice adhesion, Ice strength, Ice breaking, Ice removal, Aircraft icing, Mathematical models

50-2960

Railway on permafrost in Siberia.

Gravesen, H., Ammendrup, H., Lollike, J., International Conference on Offshore Mechanics and Arctic Engineering (OMAE), 14th, Copenhagen, Denmark, June 18-22, 1995. Proceedings. Vol.4. Edited by W.A. Nixon, D.S. Sodhi, N.K. Sinha and F.T. Christensen, New York, American Society of Mechanical Engineers, 1995, p.159-170, 21 refs.

Railroads, Embankments, Permafrost beneath roads, Permafrost preservation, Permafrost heat transfer, Ground thawing, Soil stabilization, Thermal insulation, Subgrade maintenance, Russia—Noril'sk

50-2961

Submarine cryolithozone of Russian Arctic offshore: problems of hydrocarbon recovery.

Kul'pin, L.G., Dubrovskiĭ, D.A., Obmorosheva, L.B., Tupysev, M.K., International Conference on Offshore Mechanics and Arctic Engineering (OMAE), 14th, Copenhagen, Denmark, June 18-22, 1995. Proceedings. Vol.4. Edited by W.A. Nixon, D.S. Sodhi, N.K. Sinha and F.T. Christensen, New York, American Society of Mechanical Engineers, 1995, p.171-175, 2 refs.

Geological surveys, Exploration, Crude oil, Natural gas, Petroleum industry, Economic development, Offshore drilling, Subsea permafrost, Permafrost surveys, Permafrost distribution, Russia

50-2962

Creep of ice crystals and the measurement of strain: some technical considerations.

Barrette, P.D., Sinha, N.K., Michel, B., International Conference on Offshore Mechanics and Arctic Engineering (OMAE), 14th, Copenhagen, Denmark, June 18-22, 1995. Proceedings. Vol.4. Edited by W.A. Nixon, D.S. Sodhi, N.K. Sinha and F.T. Christensen, New York, American Society of Mechanical Engineers, 1995, p.177-184, 24 refs.

Ice crystal structure, Ice strength, Ice pressure, Ice plasticity, Ice deformation, Ice creep, Mathematical models

50-2963

Potentials for utilization of hydroelectric resources in Greenland.

Taagholt, J., International Conference on Offshore Mechanics and Arctic Engineering (OMAE), 14th, Copenhagen, Denmark, June 18-22, 1995. Proceedings. Vol.4. Edited by W.A. Nixon, D.S. Sodhi, N.K. Sinha and F.T. Christensen, New York, American Society of Mechanical Engineers, 1995, p.185-191, 5 refs.

Glacial hydrology, Meltwater, Glacial lakes, Water reserves, Natural resources, Electric power, Economic development, Greenland

50-2964

Environmental impact assessment of offshore oil exploration, production and transportation in the Arctic with emphasis on ecological impacts of oil spills.

Mosbech, A., Dietz, R., Boertmann, D., International Conference on Offshore Mechanics and Arctic Engineering (OMAE), 14th, Copenhagen, Denmark, June 18-22, 1995. Proceedings. Vol.4. Edited by W.A. Nixon, D.S. Sodhi, N.K. Sinha and F.T. Christensen, New York, American Society of Mechanical Engineers, 1995, p.193-201, 64 refs.

Petroleum industry, Exploration, Economic development, Offshore drilling, Oil spills, Water pollution, Marine biology, Environmental impact, Greenland

50-2965

Method for determining the macrostructural statistics of the scattering layer of first-year sea ice from Frederick Hyde Fjord, Greenland.

Johnston, M., Sinha, N.K., International Conference on Offshore Mechanics and Arctic Engineering (OMAE), 14th, Copenhagen, Denmark, June 18-22, 1995. Proceedings. Vol.4. Edited by W.A. Nixon, D.S. Sodhi, N.K. Sinha and F.T. Christensen, New York, American Society of Mechanical Engineers, 1995, p.203-210, 17 refs.

Sea ice, Ice structure, Ice crystal structure, Ice crystal size, Ice crystal replicas, Ice density, Ice salinity, Image processing, Computer applications, Greenland

50-2966

Registration, collection and verification of hydroclimatic data by Greenland Field Investigations.

Scharling, M., Kjær, L., International Conference on Offshore Mechanics and Arctic Engineering (OMAE), 14th, Copenhagen, Denmark, June 18-22, 1995. Proceedings. Vol.4. Edited by W.A. Nixon, D.S. Sodhi, N.K. Sinha and F.T. Christensen, New York, American Society of Mechanical Engineers, 1995, p.211-213.

Weather stations, Weather observations, Meteorological data, Data processing, Data transmission, Computer applications, Greenland

50-2967

Logistics in remote areas in Greenland.

Andersson, T.I.H., Taagholt, J., International Conference on Offshore Mechanics and Arctic Engineering (OMAE), 14th, Copenhagen, Denmark, June 18-22, 1995. Proceedings. Vol.4. Edited by W.A. Nixon, D.S. Sodhi, N.K. Sinha and F.T. Christensen, New York, American Society of Mechanical Engineers, 1995, p.215-218.

Regional planning, Logistics, Economic development, Site surveys, Site accessibility, Aircraft landing areas, Topographic surveys, Exploration, Greenland

50-2968

Telecommunications in Greenland: also for offshore activities.

Malmberg, P., International Conference on Offshore Mechanics and Arctic Engineering (OMAE), 14th, Copenhagen, Denmark, June 18-22, 1995. Proceedings. Vol.4. Edited by W.A. Nixon, D.S. Sodhi, N.K. Sinha and F.T. Christensen, New York, American Society of Mechanical Engineers, 1995, p.219-224.

Regional planning, Economic development, Telecommunication, Radio communication, Spacecraft, Greenland

50-2969

Icenet: hydro power for Europe.

De Jong, D.J., International Conference on Offshore Mechanics and Arctic Engineering (OMAE), 14th, Copenhagen, Denmark, June 18-22, 1995. Proceedings. Vol.4. Edited by W.A. Nixon, D.S. Sodhi, N.K. Sinha and F.T. Christensen, New York, American Society of Mechanical Engineers, 1995, p.225-229.

Regional planning, Economic development, International cooperation, Electric power, Power lines, Underground cables, Iceland, Netherlands

50-2970

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Regional planning, Economic development, Military facilities, International cooperation, Labor factors, Education, Greenland

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Ice surveys, Ice reporting, Sea ice distribution, Ice conditions, Icebergs, Ice forecasting, Drift, Synthetic aperture radar, Spaceborne photography, Greenland

50-2972

Polar sea ice off West Greenland—a review.

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Ice surveys, Pack ice, Sea ice distribution, Ice conditions, Drift, Ice edge, Ice forecasting, Climatic changes, Statistical analysis, Greenland

50-2973

Sea ice landing strip for Boeing-727 in northern Greenland.

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Ice runways, Ice surveys, Site surveys, Ice cover strength, Ice elasticity, Ice (construction material), Bearing strength, Trafficability, Greenland

50-2974

Experimental study of tearing toughness K_{IIIC} for fresh water ice.

Li, G.W., Liu, W.B., Yue, Q.J., Shen, W., International Conference on Offshore Mechanics and Arctic Engineering (OMAE), 14th, Copenhagen, Denmark, June 18-22, 1995. Proceedings. Vol.4. Edited by W.A. Nixon, D.S. Sodhi, N.K. Sinha and F.T. Christensen, New York, American Society of Mechanical Engineers, 1995, p.281-284, 5 refs.

Ice solid interface, Ice cover strength, Ice loads, Ice pressure, Ice friction, Ice cracks, Ice deformation, Ice breaking, Environmental tests

50-2975

Study of the influence of thickness on the fracture toughness of fresh water ice by compact compression test specimen (CCTS).

Chang, C., Zhang, X.P., Zhou, X.A., Shen, W., International Conference on Offshore Mechanics and Arctic Engineering (OMAE), 14th, Copenhagen, Denmark, June 18-22, 1995. Proceedings. Vol.4. Edited by W.A. Nixon, D.S. Sodhi, N.K. Sinha and F.T. Christensen, New York, American Society of Mechanical Engineers, 1995, p 285-288, 6 refs.

Ice solid interface, Ice cover strength, Ice loads, Ice pressure, Ice cracks, Ice deformation, Ice breaking, Environmental tests

50-2976

Ice ages and the Milankovitch theory: a study of interactive climate feedback mechanisms.

Cess, R.D., Wronka, J.C., *Tellus*, June 1979, 31(3), p.185-192, With Russian summary. 17 refs.

DLC QC801.T4

Ice age theory, Climatic changes, Models, Climatology, Mathematical models, Latent heat, Albedo

50-2977

Settling velocities of small ice crystals.

Michaeli, G., *Tellus*, June 1977, 29(3), p.282-285, 11 refs.

DLC QC 801.T4

Ice crystals, Ice crystal growth, Ice crystal size, Ice crystal structure

50-2978

Tailplane stall: the rime is one reason.

Dow, J.P., Sr., Lium, G.D., *Air line pilot*, Feb. 1993, 62(2), p.36-38.

DLC TL501.A5537

Aircraft icing, Safety, Countermeasures, Ice removal, Ice prevention, Ice accretion

50-2979

Turboprop tailplane icing.

Steenblik, J.W., *Air line pilot*, Jan. 1992, 61(1), p.30-33.

DLC TL 501.A5537

Aircraft icing, Ice accretion, Countermeasures, Ice removal, Ice prevention

50-2980

Why icing causes tailplane stalls.

Ingelman-Sundberg, M., *Air line pilot*, Jan. 1992, 61(1), p.34-36.

DLC TL 501.A5537

Aircraft icing, Ice accretion, Countermeasures

50-2981

Clean wings for winter.

Steenblik, J.W., *Air line pilot*, Sep.-Oct. 1992, 61(8), p.30-33.

DLC TL501.A5537

Aircraft icing, Ice accretion, Countermeasures, Ice removal, Ice prevention

50-2982

ATC and the icing dilemma.

Glines, C.V., *Air line pilot*, Sep.-Oct. 1992, 61(8), p.34-37.

DLC TL501.A5537

Aircraft icing, Safety, Countermeasures, Ice removal, Ice prevention

50-2983
Aircraft deicing.
Roed, A., *Air line pilot*, Sep.-Oct. 1992, 61(8), p.38-39.
DLC TL501.A5537
Aircraft icing, Safety, Countermeasures, Ice removal, Ice prevention

50-2984
Fluid situation.
DiNunno, G., *Air line pilot*, Sep.-Oct. 1992, 61(8), p.40-44.
DLC TL501.A5537
Aircraft icing, Safety, Countermeasures, Ice removal, Ice prevention, Cold weather operation, Liquids, Cold weather performance

50-2985
Flameout; preventing ice and water ingestion flameouts in high- and low-bypass turbine engines. *Air line pilot*, May 1989, 58(5), p.24-25.
DLC TL501.A5537
Cold weather operation, Aircraft, Jet engines, Aircraft icing, Ice prevention, Countermeasures

50-2986
Icing menace.
Glines, C.V., *Air line pilot*, Oct. 1989, 59(11), p.18-20, For part II, see 50-2987.
DLC TL501.A5537
Aircraft icing, Cold weather performance, Ice prevention, Ice removal, Cold weather operation, Countermeasures

50-2987
Icing menace, part II.
Glines, C.V., *Air line pilot*, Jan. 1990, 59(1), p.9-12, For part I, see 50-2986.
DLC TL501.A5537
Aircraft icing, Cold weather performance, Ice prevention, Ice removal, Cold weather operation

50-2988
Icing: performance issues.
Wagner, G.A., *Air line pilot*, Nov. 1990, 59(10), p.9-12.
DLC TL501.A5537
Aircraft icing, Cold weather performance

50-2989
Cold war: a look at some of the newest weapons in aviation's age-old battle against airframe icing.
Czaplyski, V., *Air line pilot*, Nov. 1994, 63(10), p.12-15, 63.
DLC TL501.A5537
Aircraft icing, Liquids, Countermeasures, Ice removal, Ice prevention, Ice detection

50-2990
Part 135 Icing: is half a reg better than none?
DiNunno, G., *Air line pilot*, Oct.-Nov. 1993, 62(9), p.46-48.
DLC TL501.A5537
Aircraft icing, Safety, Countermeasures, Ice removal, Ice prevention

50-2991
Ground deicing problems cause accidents.
Sumwalt, R.L., III, *Air line pilot*, Dec. 1993, 62(10), p.20-24.
DLC TL501.A5537
Aircraft icing, Safety, Countermeasures, Ice removal, Ice prevention

50-2992
Interannual atmospheric circulation-sea ice extent relationships in the southern ocean: an analysis for the west Antarctic Peninsula region.
Harangozo, S.A., Conference on Climate Variations, 6th, Nashville, TN, Jan. 1994. Preprints, Boston, American Meteorological Society, 1994, p.364-367, 7 refs.
Climatic factors, Atmospheric circulation, Sea ice distribution, Ice air interface, Seasonal variations, Antarctica—West Antarctica

A systematic analysis has been undertaken to determine sea ice extent-meridional circulation links in the vicinity of the western Antarctic Peninsula. Ice extent anomalies in this area generally develop over a month or two and then often persist over periods of up to several seasons. A relationship between winter season ice extent changes and the meridional component of the geostrophic flow is evident but account needs to be taken of flow persistence as well as magnitude. Meridional circulation adjustments reflect amplitude/phase adjustments of the semi-annual cycle; the present work supports the notion that interannual changes in winter sea ice extent in the study area may in many cases ultimately depend on regional or even large-scale adjustments in the southern hemispheric circulation.

50-2993
Products of subglacial volcanic eruptions under different ice thicknesses: two examples from Antarctica.
Smellie, J.L., Skilling, I.P., *Sedimentary geology*, 1994, Vol.91, p.115-129, 25 refs.
Glacial geology, Volcanoes, Structural analysis, Geological surveys, Sedimentation, Seismology, Glacial deposits, Ice cover thickness, Antarctica—Pinafore, Mount, Antarctica—Brown Bluff

Late Cenozoic subglacially erupted volcanic sequences are scattered throughout the Antarctic Peninsula. Two of the best preserved examples, at Mount Pinafore and Brown Bluff, are complete enough to be regarded as sequence holotypes for this uncommonly preserved eruptive/depositional setting. Despite a common glacial association, the sedimentary lithofacies in the two outcrops suggest flowing and ponded water conditions, respectively, indicating significant differences in the depositional palaeoenvironments. The original ice thicknesses exerted a major control on the lithofacies which resulted from each eruptive phase. At Mount Pinafore, the lithofacies were confined within a steep-sided valley during successive eruptions beneath thin (100-150 m?), wet-based ice. The much thicker succession at Brown Bluff is a tindar-tuya edifice, which formed within a small basin (probably 15 km across) confined by ice 400 m thick. (Auth.)

50-2994
Recent climate variability in the vicinity of the Antarctic Peninsula.
King, J.C., *International journal of climatology*, 1994, 14(4), p.357-369, 24 refs.
Sea ice, Climate, Clouds (meteorology), Air ice water interaction, Solar radiation, Temperature variations, Antarctica—Antarctic Peninsula

Surface air temperature records from stations on the west coast of the Antarctic Peninsula show a higher degree of interannual variability and stronger long-term warming trends than recorded elsewhere in Antarctica. Possible mechanisms driving these fluctuations are investigated. The extreme climatic sensitivity of this region may be linked to a stronger coupling between temperatures and regional sea-ice extent than is seen elsewhere in Antarctica. Significant interannual persistence of air temperature anomalies suggests a link with ocean temperatures or circulation. (Auth.)

50-2995
Cheap, quick and safe way of surveying glaciers.
Wright, J.W., Dahl, P.A., *Photogrammetric record*, Apr. 1995, 15(85), p.43-50, With French and German summaries. 9 refs.
Glaciology, Glacier surveys, Glacier surfaces, Height finding, Photographic techniques, Photogrammetric surveys, Topographic surveys, Topographic maps, Photointerpretation, Orientation

50-2996
Land form development and pedogenesis: the effects of the last glacial cycle in the forest of Fougères (Ille et Villaine, Brittany, France). [Morphogenese-pedogenese: les heritages du dernier cycle glaciaire en foret de Fougères (Ille et Vilaine, France)]
Van Vliet-Lanoë, B., Pellerin, J., Helluin, M., *Zeitschrift für Geomorphologie.*, Dec. 1995, 39(4), p.489-510, In French with English and German summaries. 42 refs.
Pleistocene, Quaternary deposits, Loess, Periglacial processes, Geomorphology, Landforms, Soil formation, Soil profiles, Stratigraphy, France—Brittany

50-2997
Sediment yield conditioned by glaciation in a rural agricultural basin of southern Ontario, Canada.
Campo, S.H., Desloges, J.R., *Physical geography*, Nov.-Dec. 1994, 15(6), p.495-515, 33 refs.
Hydrology, Watersheds, River basins, Sediment transport, Sedimentation, Glacial deposits, Banks (waterways), Shore erosion, Canada—Ontario

50-2998
Laboratory technique for measurement of spectral induced polarization response of soil samples.
Vanhala, H., Soininen, H., *Geophysical prospecting*, July 1995, 43(5), p.655-676, 23 refs.
Soil tests, Soil physics, Glacial deposits, Hydrogeology, Sampling, Soil texture, Particle size distribution, Grain size, Dielectric properties, Electrical resistivity, Electrical measurement, Spectra

50-2999
Flow properties of crushed ice.
Singh, S.K., Jordaan, I.J., Xiao, J., Spencer, P.A., *Journal of offshore mechanics and arctic engineering*, Nov. 1995, 117(4), p.276-282, 19 refs. For another version see 47-4225.
Sea ice, Ice mechanics, Offshore structures, Ice solid interface, Fracture zones, Cracking (fracturing), Viscoelasticity, Compressive properties, High pressure tests, Simulation, Rheology

50-3000
Uniaxial constant compressive stress creep tests on sea ice.
Sinha, N.K., Zhan, C., Evgin, E., *Journal of offshore mechanics and arctic engineering*, Nov. 1995, 117(4), p.283-289, 19 refs.
Sea ice, Ice cover strength, Ice mechanics, Ice creep, Strain tests, Compressive properties, Ice solid interface, Dynamic loads, Stress concentration, Anisotropy, Temperature effects, Stress strain diagrams

50-3001
Marine record of deglaciation from the continental margin off Nova Scotia.
Keigwin, L.D., Jones, G.A., *Paleoceanography*, Dec. 1995, 10(6), p.973-985, 78 refs.
Paleoclimatology, Climatic changes, Oceanography, Ice sheets, Meltwater, Ice rafting, Quaternary deposits, Marine deposits, Stratigraphy, Lithology, Isotope analysis, Geochronology, Canada—Nova Scotia

50-3002
Glacial to interglacial surface nutrient variations of Bering deep basins recorded by $\delta^{13}C$ and $\delta^{15}N$ of sedimentary organic matter.
Nakatsuka, T., Watanabe, K., Handa, N., Matsumoto, E., *Paleoceanography*, Dec. 1995, 10(6), p.1047-1061, Refs. p.1059-1061.
Pleistocene, Oceanography, Paleoecology, Glacier oscillation, Ocean currents, Turbulent diffusion, Marine deposits, Biomass, Radioactive age determination, Geochronology, Profiles, Isotope analysis, Bering Sea

50-3003
Variations in Atlantic surface ocean paleoceanography, 50°-80°N: a time-slice record of the last 30,000 years.
Sarnthein, M., et al, *Paleoceanography*, Dec. 1995, 10(6), p.1063-1094, Refs. p.1092-1094.
Pleistocene, Oceanography, Paleoecology, Ocean currents, Ice sheets, Icebergs, Ice melting, Meltwater, Marine deposits, Isotope analysis, Radioactive age determination, Geochronology

50-3004
Temperature dependence of static charging in ice growing by riming.
Avila, E.E., Aguirre Varela, G.G., Caranti, G.M., *Journal of the atmospheric sciences*, Dec. 15, 1995, 52(24), p.4515-4522, 24 refs.
Cloud physics, Thunderstorms, Cloud electrification, Snow pellets, Ice crystal collision, Charge transfer, Polarization (charge separation), Ice electrical properties, Ice growth, Hoarfrost, Water content, Temperature effects, Simulation, Wind tunnels

50-3005
Possible high ice particle production during graupel-graupel collisions.
Takahashi, T., Nagao, Y., Kushiyama, Y., *Journal of the atmospheric sciences*, Dec. 15, 1995, 52(24), p.4523-4527, 22 refs.
Cloud physics, Precipitation (meteorology), Snow pellets, Ice crystal collision, Ice crystal growth, Mass transfer, Ice breaking, Particles, Cold chambers, Simulation, Temperature effects

50-3006

Winter-summer differences of carbon dioxide and oxygen in the Weddell Sea surface layer.

Hoppema, M., Fahrbach, E., Schröder, M., Wisotzki, A., De Baar, H.J.W., *Marine chemistry,* Dec. 1995, 51(3), p.177-192, 42 refs.

Oceanography, Geochemical cycles, Sea water, Sampling, Hydrography, Carbon dioxide, Ice formation, Vapor transfer, Air ice water interaction, Ice cover effect, Greenhouse effect, Seasonal variations, Antarctica—Weddell Sea

50-3007

Comparison between snow cover products derived from visible and microwave satellite observations.

Basist, A., Garrett, D., Ferraro, R., Grody, N., Mitchell, K., *Journal of applied meteorology,* Feb. 1996, 35(2), p.163-177, 31 refs.

Climatology, Remote sensing, Snow surveys, Sensor mapping, Snow cover distribution, Spaceborne photography, Spacecraft, Radiometry, Microwaves, Data processing, Correlation, Accuracy

50-3008

Coherent observation operators for surface data assimilation with application to snow depth.

Urban, B., *Journal of applied meteorology,* Feb. 1996, 35(2), p.258-270, 24 refs.

Remote sensing, Climatology, Atmospheric boundary layer, Surface temperature, Snow depth, Snow surveys, Mathematical models, Statistical analysis, Data processing, Correlation, Accuracy, Weather forecasting

50-3009

Carbon 14 measurements of the Martian atmosphere as an indicator of atmosphere-regolith exchange of CO_2.

Jakosky, B.M., Reedy, R.C., Masarik, J., *Journal of geophysical research,* Jan. 25, 1996, 101(E1), p.2247-2252, 32 refs.

Mars (planet), Climatology, Atmospheric physics, Atmospheric composition, Carbon dioxide, Ground ice, Ice air interface, Vapor diffusion, Computerized simulation

50-3010

Effects of roof size, heat transfer, and climate on snow loads: studies for the 1995 NBC.

Irwin, P.A., Gamble, S.L., Taylor, D.A., *Canadian journal of civil engineering,* Aug. 1995, 22(4), p.770-784, With French summary. 23 refs.

Roofs, Snow physics, Snow loads, Building codes, Design criteria, Blowing snow, Snow air interface, Wind factors, Heat loss, Snow cover effect, Analysis (mathematics)

50-3011

Linear regression analyses with censored data: estimation of PAH washout ratios and dry deposition velocities to a snow surface.

Sharma, M., Thomson, N.R., McBean, E.A., *Canadian journal of civil engineering,* Aug. 1995, 22(4), p.819-833, With French summary. 35 refs.

Climatology, Air pollution, Snow surface, Snow composition, Atmospheric composition, Aerosols, Hydrocarbons, Fallout, Statistical analysis, Mathematical models, Environmental tests, Accuracy

50-3012

Tholeiitic-alkalic transition at subglacial volcanoes, Tuya region, British Columbia, Canada.

Moore, J.G., Hickson, C.J., Calk, L.C., *Journal of geophysical research,* Dec. 10, 1995, 100(B12), p.24,577-24,592, 32 refs.

Geologic processes, Tectonics, Volcanoes, Magma, Glacial geology, Glacier beds, Lithology, Ice solid interface, Subglacial observations, Canada—British Columbia

50-3013

Lateglacial and Holocene variations of the Grey Glacier, an outlet of the South Patagonian icefield.

Marden, C.J., *Scottish geographical magazine,* Apr. 1993, 109(1), p.27-31, 31 refs.

Paleoclimatology, Climatic changes, Glacier oscillation, Glacial geology, Glacial deposits, Moraines, Geomorphology, Stratigraphy, Geochronology, Chile—Patagonia

50-3014

Differences in the duration of snow cover on Scottish ski-slopes between mild and cold winters.

Harrison, S.J., *Scottish geographical magazine,* Apr. 1993, 109(1), p.37-44, 20 refs.

Precipitation (meteorology), Snow cover distribution, Snowfall, Climatic changes, Atmospheric circulation, Snow surveys, Indexes (ratios), Seasonal variations, Statistical analysis, Mathematical models, Forecasting, Topographic effects, United Kingdom—Scotland

50-3015

Scottish landform examples. 8: Solifluction sheets in the Bowmont Valley, Cheviot Hills.

Harrison, S., *Scottish geographical magazine,* Sep. 1993, 109(2), p.119-122, 12 refs.

Geomorphology, Pleistocene, Landforms, Terraces, Periglacial processes, Solifluction, Slope processes, Glacial deposits, Glacial geology, Soil formation, United Kingdom—Scotland

50-3016

Scottish landform examples. 9: Moraines in Coire na Creiche, Isle of Skye.

Benn, D.I., *Scottish geographical magazine,* Dec. 1993, 109(3), p.187-191, 14 refs.

Glacial geology, Geomorphology, Landforms, Glacial deposits, Basal sliding, Moraines, Sediment transport, United Kingdom—Scotland

50-3017

Modeling and observational study of East Antarctic surface mass balance.

Connolley, W.M., King, J.C., *Journal of geophysical research,* Jan. 20, 1996, 101(D1), p.1335-1343, 13 refs.

Polar atmospheres, Climatology, Atmospheric circulation, Precipitation (meteorology), Atmospheric boundary layer, Glacier mass balance, Snow accumulation, Water vapor, Moisture transfer, Sounding, Correlation, Mathematical models, Simulation, Antarctica—East Antarctica

The authors examine simulations of the surface mass balance of the sector of the East Antarctic ice sheet between 2.4°W and 110.5°E as produced by the United Kingdom Meteorological Office Unified Climate Model. Estimates of the actual mass balance of this sector can be obtained from glaciological observations of snow accumulation and from studies of the atmospheric water vapor budget using radiosonde observations. The former technique gives an average sector accumulation of 104 mm/yr, and the latter yields 157 mm/yr. The modeled accumulation in this sector, 122 mm/yr, lies between these two estimates, suggesting that the model can accurately represent the processes controlling surface mass balance. However, examination of the atmospheric water vapor budget in the model shows that only 30% of the water vapor precipitated in this sector is carried by resolved-scale transport. Although the model produces the "correct" accumulation in present-day climate simulations, it is not clear that this would change appropriately if the model were used to simulate future climates. The results of this study indicate that the radiosonde technique will tend to overestimate sector accumulation, thus reconciling the two observational estimates. (Auth. mod.)

50-3018

Chlorine monoxide in the antarctic spring vortex. 2. A comparison of measured and modeled diurnal cycling over McMurdo Station, 1993.

Shindell, D.T., De Zafra, R.L., *Journal of geophysical research,* Jan. 20, 1996, 101(D1), p.1475-1487, 42 refs.

Polar atmospheres, Stratosphere, Ozone, Atmospheric attenuation, Photochemical reactions, Aerosols, Air pollution, Heterogeneous nucleation, Diurnal variations, Models

Chlorine monoxide (ClO) mixing ratio profiles within the antarctic vortex were derived on an hourly basis from ground-based measurements of pressure-broadened emission line spectra. This data set has provided the first opportunity for a detailed comparison between the output of a photochemical model and the measured *in situ* diurnal behavior of ClO in the antarctic spring stratosphere. The authors stress the importance of the diurnal behavior in furnishing a short-term, crucial test of the catalytic chlorine chemistry which determines longer-term ozone depletion. Excellent agreement is obtained between measured and modeled diurnal change using the rate constants recommended in the 1994 Jet Propulsion Laboratory (JPL) evaluation, giving support to current understanding of perturbed chlorine chemistry in the antarctic spring vortex. It is shown that the new limits set on the dimer formation rate constant reduce the uncertainty in the daily rate of chlorine catalyzed ozone loss calculated from observed ClO concentrations by ≈40% at 186-196 K. The modeled total ozone loss rate including both chemistry and vertical transport, based on these measurements, agrees well with the amount and the linear trend of ozone loss seen throughout September in coincident balloon measurements. (Auth. mod.)

50-3019

Heterogeneous atmospheric bromine chemistry.

Lary, D.J., Chipperfield, M.P., Toumi, R., Lenton, T., *Journal of geophysical research,* Jan. 20, 1996, 101(D1), p.1489-1504, 28 refs.

Clouds (meteorology), Cloud physics, Polar stratospheric clouds, Ozone, Air pollution, Atmospheric attenuation, Aerosols, Heterogeneous nucleation, Condensation, Photochemical reactions, Chemical analysis

50-3020

Precipitation development and electrification in Florida thunderstorm cells during Convection and Precipitation/Electrification Project.

Ramachandran, R., Detwiler, A., Helsdon, J., Jr., Smith, P.L., Bringi, V.N., *Journal of geophysical research,* Jan. 20, 1996, 101(D1), p.1599-1619, 76 refs.

Thunderstorms, Precipitation (meteorology), Cloud electrification, Cloud physics, Electric fields, Polarization (charge separation), Ice formation, Radar echoes, Supercooled clouds, Lightning

50-3021

Neutral and ionized PAHs: contribution to the interstellar extinction.

Salama, F., Joblin, C., Allamandola, L.J., *Planetary and space science,* Oct.-Nov. 1995, 43(10-11), p.1165-1173, 29 refs.

Cosmic dust, Geochemistry, Hydrocarbons, Extraterrestrial ice, Ice spectroscopy, Ultraviolet radiation, Ionization, Radiation absorption, Spectra, Cryogenics, Simulation

50-3022

Ion irradiation of astrophysical ices.

Strazzulla, G., Castorina, A.C., Palumbo, M.E., *Planetary and space science,* Oct.-Nov. 1995, 43(10-11), p.1247-1251, 24 refs.

Extraterrestrial ice, Cosmic dust, Ice physics, Carbon dioxide, Ionization, Photochemical reactions, Ice spectroscopy, Infrared spectroscopy, Spectra, Geochemistry, Phase transformations, Simulation

50-3023

Recent results from the Leiden Observatory Laboratory: (a) band strengths in mixed ices; (b) UV photolysis of solid methanol.

Schutte, W.A., Gerakines, P.A., *Planetary and space science,* Oct.-Nov. 1995, 43(10-11), p.1253-1256, 24 refs.

Cosmic dust, Extraterrestrial ice, Ice physics, Hydrocarbons, Ice spectroscopy, Infrared spectroscopy, Radiation absorption, Spectra, Photochemical reactions, Simulation, Ice composition

50-3024

Ultraviolet photodesorption from water ice.

Westley, M.S., Baragiola, R.A., Johnson, R.E., Baratta, G.A, *Planetary and space science,* Oct.-Nov. 1995, 43(10-11), p.1311-1315, 15 refs.

Cosmic dust, Extraterrestrial ice, Ice physics, Ice solid interface, Ice sublimation, Ultraviolet radiation, Ice spectroscopy, Photochemical reactions, Ice erosion, Simulation

50-3025

Laboratory comparisons of organic materials to interstallar dust and the Murchison meteorite.

Pendleton, Y.J., *Planetary and space science,* Oct.-Nov. 1995, 43(10-11), p.1359-1364, 34 refs.

Cosmic dust, Extraterrestrial ice, Hydrocarbons, Ice spectroscopy, Ultraviolet radiation, Radiation absorption, Optical properties, Spectra, Simulation, Correlation

50-3026

Detection of climate change in the Arctic: an updated report.

Ye, H.C., Kalkstein, L.S., Greene, J.S., International MINIMAX Workshop, College Park, MD, Sep. 27-30, 1993. Proceedings. Asymmetric change of daily temperature range, Washington, DC, U.S. Department of Energy, Apr. 1994, p.277-298, CONF-9309350, 17 refs.

DLC QC903.I5

Polar atmospheres, Climatology, Climatic changes, Global warming, Air masses, Air temperature, Temperature variations, Periodic variations, Statistical analysis

50-3027

DTR and cloudcover in the Nordic countries: observed trends and estimates for the future.

Kaas, E., Frich, P., International MINIMAX Workshop, College Park, MD, Sep. 27-30, 1993. Proceedings. Asymmetric change of daily temperature range, Washington, DC, U.S. Department of Energy, Apr. 1994, p.327-352, 23 refs.

Polar atmospheres, Climatology, Atmospheric circulation, Air temperature, Diurnal variations, Cloud cover, Statistical analysis, Mathematical models, Forecasting, Climatic factors

50-3028

Microwave remote sensing of snow.

Koike, T., Suhama, T., Workshop on the Effects of Global Climate Change on Hydrology and Water Resources at the Catchment Scale, Tsukuba, Japan, Feb. 3-6, 1992. Proceedings. Japan-U.S. Committee on Hydrology, Water Resources and Global Climate Change, JUCHWR publication No.1, Tsukuba, Japan, Ministry of Construction, Public Works Research Institute (PWRI), 1992, p.121-126, 3 refs.

DLC GB652.W67 1992

Snow surveys, Snow cover distribution, Snow depth, Snow water content, Snow temperature, Radiometry, Radio echo soundings

50-3029

Possible change of evaporation and snowmelt due to global warming and its effect on water level of Lake Biwa.

Ikebuchi, S., Workshop on the Effects of Global Climate Change on Hydrology and Water Resources at the Catchment Scale, Tsukuba, Japan, Feb. 3-6, 1992. Proceedings. Japan-U.S. Committee on Hydrology, Water Resources and Global Climate Change, JUCHWR publication No.1, Tsukuba, Japan, Ministry of Construction, Public Works Research Institute (PWRI), 1992, p.189-206, 3 refs.

DLC GB652.W67 1992

Snow hydrology, Snowmelt, Runoff, Lakes, Evaporation, Water balance, Water level, Water reserves, Global warming, Japan—Biwa, Lake

50-3030

Distributed approach to modeling snowmelt runoff in alpine catchments.

Bales, R., Galarraga, R., Elder, K., Workshop on the Effects of Global Climate Change on Hydrology and Water Resources at the Catchment Scale, Tsukuba, Japan, Feb. 3-6, 1992. Proceedings. Japan-U.S. Committee on Hydrology, Water Resources and Global Climate Change, JUCHWR publication No.1, Tsukuba, Japan, Ministry of Construction, Public Works Research Institute (PWRI), 1992, p.207-217, 12 refs.

DLC GB652.W67 1992

Snow surveys, Snow hydrology, Snowmelt, Watersheds, Runoff forecasting, Computerized simulation

50-3031

Potential effects of climate change on surface water resources of two high mountain watersheds in the western United States.

Pupacko, A., Dettinger, M.D., Duell, L.F., Jeton, A.E., Smith, J.L., Workshop on the Effects of Global Climate Change on Hydrology and Water Resources at the Catchment Scale, Tsukuba, Japan, Feb. 3-6, 1992. Proceedings. Japan-U.S. Committee on Hydrology, Water Resources and Global Climate Change, JUCHWR publication No.1, Tsukuba, Japan, Ministry of Construction, Public Works Research Institute (PWRI), 1992, p.275-286, 6 refs.

DLC GB652.W67 1992

Snow hydrology, Snowmelt, Runoff, Watersheds, Water reserves, Global warming, United States—Sierra Nevada

50-3032

Effects of potential climate change on the hydrology and the maintenance of channel morphology in the Gunnison River basin, Colorado.

Parker, R.S., Kuhn, G., Hay, L., Elliott, J.G., Workshop on the Effects of Global Climate Change on Hydrology and Water Resources at the Catchment Scale, Tsukuba, Japan, Feb. 3-6, 1992. Proceedings. Japan-U.S. Committee on Hydrology, Water Resources and Global Climate Change, JUCHWR publication No.1, Tsukuba, Japan, Ministry of Construction, Public Works Research Institute (PWRI), 1992, p.399-410, 10 refs.

DLC GB652.W67 1992

River basins, Snow hydrology, Snowmelt, Runoff, Stream flow, Channel stabilization, Global warming, United States—Colorado—Gunnison River

50-3033

Probing ice sheets with imaging radar.

Raney, R.K., *Science*, Dec. 3, 1993, 262(5139), p.1521-1522, 4 refs.

Ice sheets, Radar echoes, Radar photography, Imaging, Remote sensing

50-3034

Glacial landforms of Glen Geusachan, Cairngorms: a reinterpretation.

Bennett, M.R., Glasser, N.F., *Scottish geographical magazine*, Sep. 1991, 107(2), p.116-123, 33 refs.

DLC G1.S43

Glacial geology, Moraines, Meltwater, Channels (waterways), Glacier ablation, United Kingdom—Scotland

50-3035

Insects in deep freeze.

Barnes-Svarney, P., *Technology review*, Apr. 1992, 95(3), p.20-21.

Cryobiology, Ecology, Frost protection, Cold weather survival, Antifreezes, Solutions

50-3036

Recent white spruce dynamics at the subarctic alpine treeline of north-western Canada.

Szeicz, J.M., MacDonald, G.M., *Journal of ecology*, Oct. 1995, 83(5), p.873-885, 49 refs.

Plant ecology, Climatology, Climatic changes, Trees (plants), Forest lines, Growth, Forest tundra, Tundra climate, Subarctic landscapes, Alpine landscapes, Plant tissues, Age determination, Canada—Northwest Territories—Mackenzie Mountains

50-3037

Maximum likelihood method for parameter estimation in linear model with below-detection data.

Sharma, M., McBean, E.A., Thomson, N., *Journal of environmental engineering*, Nov. 1995, 121(11), p.776-784, 29 refs.

Climatology, Atmospheric composition, Air flow, Air pollution, Aerosols, Hydrocarbons, Fallout, Snow surface, Snow air interface, Statistical analysis, Mathematical models, Forecasting

50-3038

Three distinct types of unfrozen water in fully hydrated phospholipid bilayers: a combined ^{2}H- and ^{31}P-NMR study.

Hsieh, C.H., Wu, W.G., *Chemistry and physics of lipids*, Oct. 22, 1995, 78(1), p.37-45, 38 refs.

Ice physics, Water structure, Solutions, Hydrates, Solubility, Unfrozen water content, Classifications, Supercooling, Nuclear magnetic resonance, Molecular structure, Hygroscopic water, Ice water interface, Spectra

50-3039

Still the Great Lakes' best icebreaker. *Seaway review*, July-Sep. 1995, 24(1), p.59-62.

Icebreakers, Marine transportation, Performance, Cost analysis, United States—Great Lakes

50-3040

Structural properties of uncompressed crystalline monolayers of alcohols $C_2H_{2n+1}OH$ (n=13-31) on water and their role as ice nucleators.

Majewski, J., et al, *Chemistry—a European journal*, 1995, 1(5), p.304-311, With Hebrew abstract. 29 refs.

Hydrocarbons, Ice physics, Molecular structure, Monomolecular films, Polymers, Ice nuclei, Ice solid interface, Heterogeneous nucleation, Two dimensional nucleation, X ray diffraction, X ray analysis

50-3041

Recent advance of the arctic treeline along the eastern coast of Hudson Bay.

Lescop-Sinclair, K., Payette, S., *Journal of ecology*, Dec. 1995, 83(6), p.929-936, 46 refs.

Forest tundra, Tundra climate, Subarctic landscapes, Climatic changes, Plant ecology, Forest lines, Growth, Acclimatization, Snow cover effect, Global warming, Canada—Hudson Bay

50-3042

Characterization of frozen ground strength and support for hardening transition and mobility tests for the Hard Mobile Launcher.

Chamberlain, E.J., Janoo, V., Semprebon, J., Carbee, D., Durell, G., MP 3766, *U.S. Army Cold Regions Research and Engineering Laboratory. Final draft report*, July 1989, 31p. + appends., 3 refs.

Military equipment, Military research, Soil tests, Excavation, Clay soils, Frozen ground strength, Frozen ground physics, Soil temperature, Compressive properties, Cold weather tests, Hardness tests, Bituminous concretes, Snow cover effect, Forecasting

The purpose of this study was to obtain information on how soil strength affects the ability of the Hard Mobile Launcher (HML) to perform its hardening transition function in the Northern Tier of the United States. The authors characterized the variation of soil strength during the winter for 7 sites, temperature and moisture data on an hourly basis, strength to soil moisture and temperature conditions, soil strength in the upper 6 inches at each site on an hourly basis, and the percent of time that the strength exceeded certain levels. When coupled with data from hardening transition tests with the prototype HML, this data will allow the determination of the percent of time that the HML can perform its hardening transition function. The unconfined compressive strength in the upper 4 inches (the grouser height was reduced from 6 in. to 4 in. on the prototype HML) at 4 of the test sites exceeds 1200 psi more than 15% of the time during the winter. This strength level may be critical to the hardening transition task. Also presented are data collected in direct support of the hardening transition tests at Malmstrom Air Force Base. This data includes snow and soil conditions and temperatures. Lastly, the results of unconfined compressive strength tests on asphalt concrete samples are presented. This work was done in support of planned hardening transition tests on an asphalt concrete skid pad. (Auth. mod.)

50-3043

Tropical alpine environments—plant form and function.

Rundel, P.W., ed, Smith, A.P., ed, Meinzer, F.C., ed, Cambridge, Cambridge University Press, 1994, 376p., Refs. passim. For individual selected paper see 50-3044 through 50-3061.

DLC QK474.5 T75

Plant ecology, Plants (botany), Alpine landscapes, Plant physiology, Cold weather survival, Cold tolerance, Vegetation patterns, Biomass, Biogeography, Growth, Nutrient cycle, Temperature effects, Altitude

50-3044

Introduction to tropical alpine vegetation.

Smith, A.P., Tropical alpine environments—plant form and function. Edited by P.W. Rundel et al, Cambridge, Cambridge University Press, 1994, p.1-19, 58 refs.

DLC QK474.5.T75

Plants (botany), Plant ecology, Ecosystems, Alpine landscapes, Vegetation patterns, Growth, Forest lines

50-3045

Tropical alpine climates.

Rundel, P.W., Tropical alpine environments—plant form and function. Edited by P.W. Rundel et al, Cambridge, Cambridge University Press, 1994, p.21-44, 49 refs.

DLC QK474.5 T75

Plant ecology, Ecosystems, Alpine landscapes, Climatology, Air temperature, Temperature variations, Altitude, Climatic factors

50-3046

Páramo microclimate and leaf thermal balance of Andean giant rosette plants.

Meinzer, F.C., Goldstein, G., Rada, F., Tropical alpine environments—plant form and function. Edited by P.W. Rundel et al, Cambridge, Cambridge University Press, 1994, p.45-59, 27 refs.

DLC QK474.5 T75

Plant ecology, Alpine landscapes, Microclimatology, Insolation, Radiant cooling, Plant tissues, Surface temperature, Radiation absorption, Heat balance, Heat loss, Altitude

50-3047

Comparative water relations of tropical alpine plants.

Meinzer, F.C., Goldstein, G., Rundel, P.W., Tropical alpine environments—plant form and function. Edited by P.W. Rundel et al, Cambridge, Cambridge University Press, 1994, p.61-76, 25 refs.

DLC QK474.5 T75

Plant ecology, Alpine landscapes, Ecosystems, Plant physiology, Water balance, Water storage, Water transport, Desiccation, Transpiration, Altitude

50-3048

Cold tolerance in tropical alpine plants.

Beck, E., Tropical alpine environments—plant form and function. Edited by P.W. Rundel et al, Cambridge, Cambridge University Press, 1994, p.77-110, Refs. p.106-110.

DLC QK474.5 T75

Plant ecology, Alpine landscapes, Plant physiology, Cold tolerance, Frost resistance, Cold weather survival, Plant tissues, Surface temperature, Temperature variations, Temperature effects

50-3049

Anatomy of tropical alpine plants.

Carlquist, S., Tropical alpine environments—plant form and function. Edited by P.W. Rundel et al, Cambridge, Cambridge University Press, 1994, p.111-128, 39 refs.

DLC QK474.5 T75

Plant ecology, Alpine landscapes, Plant physiology, Plants (botany), Plant tissues, Wood, Structural analysis, Cold tolerance

50-3050

Environmental biology of a tropical treeline species, *Polylepsis sericea*.

Goldstein, G., Meinzer, F.C., Rada, F., Tropical alpine environments—plant form and function. Edited by P.W. Rundel et al, Cambridge, Cambridge University Press, 1994, p.129-149, 41 refs.

DLC QK474.5 T75

Plant ecology, Plant physiology, Forest ecosystems, Forest lines, Trees (plants), Microclimatology, Supercooling, Frost resistance, Cold tolerance, Water balance, Cold weather survival

50-3051

Morphological and physiological radiation in páramo *Draba*.

Pfitsch, W.A., Tropical alpine environments—plant form and function. Edited by P.W. Rundel et al, Cambridge, Cambridge University Press, 1994, p.151-165, 26 refs.

DLC QK474.5 T75

Plant ecology, Alpine landscapes, Plant physiology, Microclimatology, Biogeography, Growth, Plant tissues, Structural analysis, Classifications

50-3052

Sediment-based carbon nutrition in tropical alpine *Isoetes*.

Keeley, J.E., DeMason, D.A., Gonzalez, R., Markham, K.R., Tropical alpine environments—plant form and function. Edited by P.W. Rundel et al, Cambridge, Cambridge University Press, 1994, p.167-194, 34 refs.

DLC QK474.5 T75

Plant ecology, Plants (botany), Alpine landscapes, Plant tissues, Structural analysis, Plant physiology, Nutrient cycle, Sediments, Biomass, Carbon dioxide

50-3053

Functional significance of inflorescence pubescence in tropical alpines species of *Puya*.

Miller, G.A., Tropical alpine environments—plant form and function. Edited by P.W. Rundel et al, Cambridge, Cambridge University Press, 1994, p.195-213, 51 refs.

DLC QK474.5 T75

Plant ecology, Alpine landscapes, Plant physiology, Growth, Plant tissues, Structural analysis, Structural changes, Cold tolerance, Surface temperature, Temperature control

50-3054

Turnover and conservation of nutrients in the pachycaul *Senecio keniodendron*.

Beck, E., Tropical alpine environments—plant form and function. Edited by P.W. Rundel et al, Cambridge, Cambridge University Press, 1994, p.215-221, 6 refs.

DLC QK474.5 T75

Plant ecology, Alpine landscapes, Trees (plants), Frost resistance, Plant physiology, Nutrient cycle, Growth, Plant tissues, Decomposition, Thermal insulation

50-3055

Soil nutrient dynamics in East African alpine ecosystems.

Rehder, H., Tropical alpine environments—plant form and function. Edited by P.W. Rundel et al, Cambridge, Cambridge University Press, 1994, p.223-228, 16 refs.

DLC QK474.5 T75

Plant ecology, Alpine landscapes, Ecosystems, Soil chemistry, Soil water, Plant physiology, Nutrient cycle, Biomass, Growth, Seasonal variations, Topographic effects, Kenya—Kenya, Mount

50-3056

Overview of the reproductive biology of *Espeletia* (Asteraceae) in the Venezuelan Andes.

Berry, P.E., Calvo, R.N., Tropical alpine environments—plant form and function. Edited by P.W. Rundel et al, Cambridge, Cambridge University Press, 1994, p.229-249, Refs. p.247-249.

DLC QK474.5 T75

Plant ecology, Plants (botany), Trees (plants), Alpine landscapes, Growth, Biogeography, Vegetation patterns, Altitude, Classifications, Cold tolerance, Venezuela—Andes Mountains

50-3057

Population biology of Mount Kenya lobelias.

Young, T.P., Tropical alpine environments—plant form and function. Edited by P.W. Rundel et al, Cambridge, Cambridge University Press, 1994, p.251-272, 21 refs.

DLC QK474.5 T75

Plant ecology, Alpine landscapes, Biomass, Phenology, Cold tolerance, Distribution, Biogeography, Vegetation patterns, Kenya—Kenya, Mount

50-3058

Population biology of *Senecio keniodendron* (Asteraceae)- and Afroalpine giant rosette plant.

Smith, A.P., Young, T.P., Tropical alpine environments—plant form and function. Edited by P.W. Rundel et al, Cambridge, Cambridge University Press, 1994, p.273-293, 23 refs.

DLC QK474.5 T75

Plant ecology, Alpine landscapes, Vegetation patterns, Biogeography, Biomass, Distribution, Growth, Altitude, Kenya—Kenya, Mount

50-3059

Population dynamics and flowering in a Hawaiian alpine rosette plant, *Argyroxiphium sandwicense*.

Rundel, P.W., Witter, M.S., Tropical alpine environments—plant form and function. Edited by P.W. Rundel et al, Cambridge, Cambridge University Press, 1994, p.295-306, 16 refs.

DLC QK474.5 T75

Plant ecology, Alpine landscapes, Plants (botany), Distribution, Biomass, Growth, Vegetation patterns, United States—Hawaii

50-3060

Plant form and function in alpine New Guinea.

Hnatiuk, R.J., Tropical alpine environments—plant form and function. Edited by P.W. Rundel et al, Cambridge, Cambridge University Press, 1994, p.307-318, 30 refs.

DLC QK474.5 T75

Plant ecology, Alpine landscapes, Growth, Distribution, Ecosystems, Biomass, Vegetation patterns, New Guinea

50-3061

Tropical alpine ecology: progress and priorities.

Rundel, P.W., Meinzer, F.C., Smith, A.P., Tropical alpine environments—plant form and function. Edited by P.W. Rundel et al, Cambridge, Cambridge University Press, 1994, p.355-363, 31 refs.

DLC QK474.5 T75

Plant ecology, Plants (botany), Alpine landscapes, Ecosystems, Growth, Biomass, Cold tolerance, Climatic changes, Vegetation patterns

50-3062

Influence of dredging on the biota of the Barents Sea during development of the Stockman condensed gas deposit.

Matishov, G.G., Shparkovskiĭ, I.A., Nazimov, V.V., *Doklady biology sciences,* Nov.-Dec. 1995, Vol.345, p.575-578, Translated from Doklady Akademii nauk. 8 refs.

Oceanography, Marine biology, Biomass, Survival, Dredging, Ocean bottom, Suspended sediments, Soil erosion, Environmental impact, Barents Sea

50-3063

Details of a probe method for interstitial soil water sampling and hydraulic conductivity and temperature measurement.

Harrison, W.D., Osterkamp, T.E., Inoue, M., University of Alaska. Geophysical Institute report. No.UAG R-280, Fairbanks, Jan. 1981, 17p. + appends., 9 refs.

Soil tests, Subsea permafrost, Active layer, Soil water, Samplers, Boreholes, Probes, Temperature measurement, Design

50-3064

Evidence for the removal of gaseous HNO_3 inside the arctic polar vortex in January 1992.

Höpfner, M., Blom, C.E., Blumenstock, T., Fischer, H., Gulde, T., *Geophysical research letters,* Jan. 15, 1996, 23(2), p.149-152, 25 refs.

Climatology, Cloud physics, Polar stratospheric clouds, Polar atmospheres, Ozone, Atmospheric attenuation, Aerosols, Sounding, Chemical properties

50-3065

Bromine-chlorine coupling in the antarctic ozone hole.

Danilin, M.Y., Sze, N.D., Ko, M.K.W., Rodriguez, J.M., Prather, M.J., *Geophysical research letters,* Jan. 15, 1996, 23(2), p.153-156, 37 refs.

Polar atmospheres, Climatology, Polar stratospheric clouds, Atmospheric attenuation, Ozone, Aerosols, Air pollution, Heterogeneous nucleation, Photochemical reactions, Models

The contribution from the chlorine and bromine species in the formation of the antarctic ozone hole is evaluated. This modeling study examines formation of the antarctic ozone hole for a wide range of bromine concentrations and for chlorine concentrations typical of the last two decades. The photochemical evolution of a single parcel of air is followed, typical of the inner antarctic vortex (with polar stratospheric clouds (PSC)). The contributions of the different catalytic cycles responsible for ozone loss are tabulated. The deep minimum in ozone is driven primarily by the chlorine abundance. As bromine levels decrease, the magnitude of the chlorine-catalyzed ozone loss increases, because bromine suppresses ClO by accelerating the conversion of ClO and Cl_2O_2 back to HCl. For this range of conditions, the local relative efficiency of ozone destruction per bromine atom to that per chlorine atom ranges from 33 to 55, decreasing with increase of bromine. (Auth. mod.)

50-3066

Effect of volcanic aerosols on ultraviolet radiation in Antarctica.

Tsitas, S.R., Yung, Y.L., *Geophysical research letters,* Jan. 15, 1996, 23(2), p.157-160, 22 refs.

Polar atmospheres, Stratosphere, Ozone, Volcanic ash, Aerosols, Solar radiation, Ultraviolet radiation, Light scattering, Radiation balance

Volcanic eruptions can inject large amounts of aerosol into the atmosphere, and at large solar zenith angles, scattering by these aerosols can actually increase the flux of UV-B radiation reaching the surface. This is surprising since aerosols increase the reflection of sunlight to space. This phenomenon makes Antarctica during spring the most susceptible place on Earth to the scattering effect of volcanic aerosols, due to the combined effect of the spring ozone hole and the large solar zenith angles characteristic of this time of year. It is shown that an aerosol layer lying above Antarctica during spring will decrease the integrated daily dose of biologically weighted irradiance, weighted by the erythema action spectrum, by only up to 5%. Hence the effects of any significant destruction of ozone induced by volcanic aerosols will not be offset by aerosol scattering. Thus after a volcanic eruption, life in Antarctica during spring will suffer the combined effects of the spring ozone hole and ozone destruction induced by volcanic aerosols, with the latter effect only slightly offset by aerosol scattering. (Auth. mod.)

50-3067

Raman spectroscopic study on the spatial distribution of nitrogen and oxygen on natural ice clathrates and their decomposition to air bubbles.

Pauer, F., Kipfstuhl, J., Kuhs, W.F., *Geophysical research letters,* Jan. 15, 1996, 23(2), p.177-180, 16 refs.

Paleoclimatology, Ice sheets, Ice cores, Ice spectroscopy, Clathrates, Geochemistry, Decomposition, Bubbles, Phase transformations, Spectra

50-3068

Vertical motion and ice thickness variation in western North America.

Trupin, A.S., Easson, D.A., Han, D.Z., *Geophysical research letters,* Feb. 1, 1996, 23(3), p.252-256, 16 refs.

Glacier mass balance, Glacial hydrology, Glacier melting, Meltwater, Mountain glaciers, Glacier thickness, Isostasy, Sea level, Tidal currents, Correlation, Viscoelasticity

50-3069

Decadal oscillations driven by the annual cycle in a zonally-averaged coupled ocean-ice model.

Yang, J.Y., Huang, R.X., *Geophysical research letters,* Feb. 1, 1996, 23(3), p.269-272, 17 refs.

Climatology, Climatic changes, Oceanography, Surface temperature, Seasonal variations, Sea ice, Air ice water interaction, Ice cover effect, Ice cover thickness, Salinity, Ocean currents, Mathematical models

50-3070

Interannual variability of the north polar vortex in the lower stratosphere during the UARS mission.

Zurek, R.W., Manney, G.L., Miller, A.J., Gelman, M.E., Nagatani, R.M., *Geophysical research letters,* Feb. 1, 1996, 23(3), p.289-292, 18 refs.

Polar atmospheres, Climatology, Air temperature, Atmospheric circulation, Temperature variations, Seasonal variations, Atmospheric attenuation, Polar stratospheric clouds, Temperature effects

50-3071

Polar cap contraction associated with the leading edge of a magnetic cloud.

Knipp, D.J., Emery, B.A., *Geophysical research letters,* Feb. 1, 1996, 23(3), p.305-308, 7 refs.

Atmospheric electricity, Geomagnetism, Solar radiation, Electric fields, Convection

50-3072

Experimental study on the melting transition at interface between ice crystal and substrate.

Furukawa, Y., Ishizaki, T., Ishikawa, I., Maruyama, M., International Conference on the Structure of Surfaces, 4th, Shanghai, China, Aug. 16-19, 1993. Proceedings, Singapore, World Scientific Publishing Co., 1994, p.511-516, 12 refs.

DLC QD506.A1 I575

Ice physics, Ice solid interface, Ice water interface, Ice crystals, Water films, Phase transformations, Ice melting, Melting points, Refractivity, Supercooling

50-3073

Molecular dynamics study of surface melting on ice crystal.

Nada, H., Furukawa, Y., International Conference on the Structure of Surfaces, 4th, Shanghai, China, Aug. 16-19, 1993. Proceedings, Singapore, World Scientific Publishing Co., 1994, p.543-547, 5 refs.

DLC QD506.A1 I575

Ice physics, Ice melting, Phase transformations, Ice crystal structure, Molecular structure, Ice density, Molecular energy levels, Ice water interface, Layers, Thermodynamic properties, Simulation, Anisotropy

50-3074

Freeze protection of Florida citrus with microsprinkler irrigation.

Parsons, L.R., Wheaton, T.A., International Microirrigation Congress, 5th, Orlando, FL, Apr. 2-6, 1995. Microirrigation for a changing world: conserving resources/preserving the environment. Proceedings, Orlando, American Society of Agricultural Engineers, 1995, p.25-30, 19 refs.

Agriculture, Trees (plants), Irrigation, Frost protection, Cold weather survival, Spray freezing, Aerosols, Water vapor, Temperature control, Ice cover effect

50-3075

Microsprinkler irrigation for freeze protection of young citrus trees.

Davies, F.S., International Microirrigation Congress, 5th, Orlando, FL, Apr. 2-6, 1995. Microirrigation for a changing world: conserving resources/preserving the environment. Proceedings, Orlando, American Society of Agricultural Engineers, 1995, p.31-36, 12 refs.

DLC S619.T74 I58

Agriculture, Trees (plants), Frost protection, Frost resistance, Irrigation, Spray freezing, Insulation, Cold weather survival, Temperature control, Ice cover effect

50-3076

Tree-clip development in microirrigation allows easy frost and freeze protection.

Thayer, S.S., International Microirrigation Congress, 5th, Orlando, FL, Apr. 2-6, 1995. Microirrigation for a changing world: conserving resources/preserving the environment. Proceedings, Orlando, American Society of Agricultural Engineers, 1995, p.975-978.

DLC S619.T74 I58

Agriculture, Trees (plants), Frost protection, Spray freezing, Irrigation, Valves, Design

50-3077

Hydromechanization of earthwork under the conditions in the Far East and Siberia. [Gidromekhanizatsiia zemlianykh rabot v usloviiakh Dal'nego Vostoka i Sibiri]

Mel'nikov, I.T., *Transportnoe stroitel'stvo,* Aug. 1995, No.8, p.3-6, In Russian.

Earthwork, Excavation, Hydraulic structures, Construction equipment, Cold weather construction, Cold weather operation, Russia—Far East, Russia—Siberia

50-3078

Development of transportation centers and communications in northwestern Russia. [Razvitie transportnykh uzlov i kommunikatsiĭ severo-zapadnykh regionov Rossii]

Koniukhov, A.P., *Transportnoe stroitel'stvo,* Aug. 1995, No.8, p.12-14, In Russian.

Regional planning, Transportation, Marine transportation, Railroads, Cold weather operation, Russia

50-3079

Development of leading technology in the "MOSTROI-2" (AOOT "SIBMOST") trust. [Razvitie peredovykh tekhnologiĭ v treste "MOSTROI-2" (AOOT "SIBMOST")]

Karaulov, M.E., *Transportnoe stroitel'stvo,* Sep. 1995, No.9, p.24-27, In Russian.

Cold weather construction, Bridges, Construction materials, Design, Russia—Siberia

50-3080

Flagship of bridge building in Siberia. [Flagman mostostroeniia v Sibiri]

Vinogradov, S.N., Il'inov, V.P., *Transportnoe stroitel'stvo,* Sep. 1995, No.9, p.31-34, In Russian.

Bridges, Design, Cold weather construction, History, Russia—Siberia

50-3081

Construction of non-class bridges and sea moorings under the conditions of the European North. [Sooruzhenie vneklassnykh mostov i morskikh prichalov v usloviiakh evropeĭskogo severa]

Okin', E.I., Tomil'chenko, V.S., *Transportnoe stroitel'stvo,* Oct. 1995, No.10, p.15-18, In Russian.

Cold weather construction, Bridges, Moorings, Design, Russia

50-3082

Scientific basis for the construction of railroads. [Nauchnoe obespechenie stroitel'stva zheleznykh dorog]

Pereselenkov, G.S., *Transportnoe stroitel'stvo,* Nov.-Dec. 1995, No.11-12, p.11-14, In Russian.

Cold weather construction, Railroads, Organizations, Design criteria, Russia—Siberia

50-3083

Transportation construction in the cryolithozone. [Transportnoe stroitel'stvo v kriolitozone]

Tsernant, A.A., *Transportnoe stroitel'stvo,* Nov.-Dec. 1995, No.11-12, p.14-18, In Russian.

Cold weather construction, Transportation, History, Russia

50-3084

Steel and steel reinforced concrete spans of modern bridges. [Stal'nye i stalezhelezobetonnye proletnye stroeniia sovremennykh mostov]

Platonov, A.S., Kruchinkin, A.V., *Transportnoe stroitel'stvo,* Nov.-Dec. 1995, No.11-12, p.23-25, In Russian.

Bridges, Reinforced concretes, Steel structures, Design, Standards, Cold weather performance, Russia

50-3085

Prospects for the development of the industrial construction base in the Novosibirsk region. [Perspektivy razvitiia proizvodstvennoĭ bazy stroitel'stva Novosibirskoĭ oblasti]

Ageenko, N.N., Zarueva, L.V., Shcherbakov, A.I., *Izvestiia vysshikh uchebnykh zavedeniĭ. Stroitel'stvo,* Oct. 1995, No.10, p.72-77, In Russian. 6 refs.

Cold weather construction, Construction materials, Residential buildings

50-3086

Heat losses through outer protective enclosures with "bridges of cold" under the conditions of the northern Tiumen region. [Teplovye poteri cherez naruzhenye ograzhdeniia pri nalichii "mostov kholoda" dlia uslovii Severa Tiumenskoi oblasti]
Shapoval, A.F., Aksenov, B.G., Gorkovenko, A.I., Molostova, I.E., *Izvestiia vysshikh uchebnykh zavedenii. Stroitel'stvo,* Oct. 1995, No.10, p.86-89, In Russian. 2 refs.
Heat balance, Heat loss, Analysis (mathematics), Computer programs, Panels, Cold weather operation, Temperature distribution

50-3087

Siberia and the metro. [Sibir' i metro]
Safronov, E.A., *Izvestiia vysshikh uchebnykh zavedenii. Stroitel'stvo,* Oct. 1995, No.10, p.106-111, In Russian. 3 refs.
Underground facilities, Transportation, Cold weather operation, Economic analysis, Russia—Siberia

50-3088

Evolution of the ecosystem and biogeography of seas in the European Arctic. [Evoliutsiia ekosistem i biogeografiia morei evropeiskoi Arktiki]
Pavlov, D.S., ed, St. Petersburg, Nauka, 1994, 219p., In Russian with English table of contents. Refs. p.199-216.
Ecosystems, Plankton, Marine biology, Environmental impact, Ecology, Water pollution, Fallout, Hydrodynamics, Biomass, Barents Sea

50-3089

Elastic response of the earth to interannual variations in antarctic precipitation.
Conrad, C.P., Hager, B.H., *Geophysical research letters,* Dec. 1, 1995, 22(23), p.3183-3186, 13 refs.
Precipitation (meteorology), Glacier mass balance, Ice volume, Ice cover effect, Periodic variations, Ice sheets, Ice loads, Tectonics, Isostasy, Viscoelasticity
Measurements of elastic displacements of the bedrock surrounding large ice sheets have been proposed as a means to detect mass changes in these ice sheets. However, accumulation of glacial mass on the ice sheets is subject to large spatial and temporal variations in precipitation. The authors simulated the response of the antarctic continent to a stochastic model of interannual precipitation variations, and show that interannual variations in the elastic response of the earth are large compared to the long-term mean of displacements produced by an assumed average ice mass imbalance of 10%. If, as some scientists predict, antarctic ice mass changes in the future become dramatic, the long-term signal should be large enough to be detected by a few years of geodetic measurements, despite climatic noise. (Auth. mod.)

50-3090

Uptake of HBr on ice at polar atmospheric conditions.
Chu, L.T., Heron, J.W., *Geophysical research letters,* Dec. 1, 1995, 22(23), p.3211-3214, 23 refs.
Polar atmospheres, Aerosols, Cloud physics, Ice physics, Ozone, Polar stratospheric clouds, Heterogeneous nucleation, Ice vapor interface, Simulation
The uptake of HBr in water ice has been investigated in a flow reactor under polar atmospheric conditions. The HBr uptake on ice films was determined in various molecular density ranges at 188 and 195 K. This is the first report of a laboratory study at polar atmospheric conditions that shows $HBr{\cdot}3H_2O$ to be formed during the uptake process. The HBr adsorption and uptake thermodynamics were also investigated. The implications of these new findings for the heterogeneous chemistry of the polar ozone depletion are briefly discussed. (Auth. mod.)

50-3091

Chlorine budget of the lower polar stratosphere: upper limits on ClO, and the implications of new Cl_2O_2 photolysis cross sections.
Shindell, D.T., De Zafra, R.L., *Geophysical research letters,* Dec. 1, 1995, 22(23), p.3215-3218, 17 refs.
Polar atmospheres, Stratosphere, Aerosols, Photochemical reactions, Chemical properties, Heterogeneous nucleation, Antarctica—McMurdo Station
Chlorine catalytic chemistry, which destroys ozone while cycling chlorine between Cl, ClO, and Cl_2O_2, is the primary cause of the springtime antarctic ozone hole. The authors calculated the concentrations of Cl_2O_2 which are in equilibrium with midday ground-based, aircraft, and satellite observations of ClO in the antarctic spring lower stratosphere. Two significant conclusions are presented here: (1) using the JPL 94 recommended rates and photolysis cross sections, more than ≈2.0 ppbv ClO in the polar lower stratosphere causes inferred total active chlorine to exceed the total chlorine budget. This limit is smaller than some reported ClO measurements. (2) Using smaller cross sections recently measured by Huder and DeMore [1995], the amount of Cl_2O_2 in midday equilibrium with measured ClO is approximately doubled. Activated chlorine inferred from many measurements then exceeds total chlorine in the lower stratosphere, suggesting these cross sections may be too small. (Auth. mod.)

50-3092

Meteor-3/TOMS observations of the 1994 ozone hole.
Herman, J.R., Newman, P.A., Larko, D., *Geophysical research letters,* Dec. 1, 1995, 22(23), p.3227-3229, 20 refs.
Polar atmospheres, Climatology, Stratosphere, Atmospheric density, Radiometry, Polar stratospheric clouds, Ozone, Seasonal variations
The development of the 1994 springtime (Sep.-Nov.) antarctic ozone hole was observed by the Meteor-3/TOMS (Total Ozone Mapping Spectrometer) to result in a very low minimum ozone value, 90±5 DU (Dobson Units) on Sep. 28, 1994. During late Sep. and early Oct., the region of extremely low ozone values was centered on the geographical pole between 85°S and 90°S. The geographical extent of the ozone hole region reached a maximum during the first week in Oct. with an elliptical area covering 24×10^6 km^2, reaching to the southern tip of South America. This approximately matched previous area records. After the maximum area was reached in early Oct., the 1994 ozone hole region was very similar to the 1993 ozone hole throughout the remainder of the month. The area of low temperatures (<196 K), where polar stratospheric clouds can form and heterogeneous chemistry is significant, has not increased over the past 16 years. During this period, the large trends in the area and minimum ozone amounts of the antarctic ozone hole do not appear to be related to atmospheric temperature trends. (Auth. mod.)

50-3093

Chemical sputtering could produce sodium vapor and ice on Mercury.
Potter, A.E., *Geophysical research letters,* Dec. 1, 1995, 22(23), p.3289-3292, 29 refs.
Extraterrestrial ice, Planetary environments, Geochemistry, Regolith, Ground ice, Solar radiation, Protons, Radiation absorption, Decomposition

50-3094

Observational studies of the role of polar regions in mid-latitude ozone loss.
Jones, R.L., MacKenzie, A.R., *Geophysical research letters,* Dec. 15, 1995, 22(24), p.3485-3488, 22 refs.
Polar atmospheres, Climatology, Stratosphere, Atmospheric circulation, Atmospheric density, Ozone, Wind direction, Aerosols, Desiccation
The export of polar air to low latitudes during each winter can bring air that has undergone recent ozone depletion or air in which chlorine activation has occurred, both potentially contributing to mid-latitude ozone loss. If this 'vortex outflow' is large enough, it may influence the relationship between atmospheric chlorine loading and ozone loss; knowledge of this process is thus essential for prediction models. In this paper, *in situ* observations of nitrogen compounds from both hemispheres are used to quantify the transport of chemically perturbed polar air to lower latitudes, and show that the transport of air from the polar vortex, at least above the 400K potential temperature surface, appears small. (Auth. mod.)

50-3095

Lidar observations of stratospheric ozone and aerosol above the Canadian high arctic during the 1994-95 winter.
Donovan, D.P., Bird, J.C., Whiteway, J.A., Duck, T.J., Pal, S.R., Carswell, A.I., *Geophysical research letters,* Dec. 15, 1995, 22(24), p.3489-3492, 15 refs.
Polar atmospheres, Climatology, Atmospheric composition, Turbulent diffusion, Stratosphere, Aerosols, Ozone, Lidar

50-3096

Refractive index and density of vapor-deposited ice.
Berland, B.S., Brown, D.E., Tolbert, M.A., George, S.M., *Geophysical research letters,* Dec. 15, 1995, 22(24), p.3493-3496, 20 refs.
Cloud physics, Ice physics, Climatology, Ice growth, Ice crystal optics, Ice density, Ice solid interface, Refractivity, Porosity, Polar stratospheric clouds, Simulation, Lasers
In an experiment designed to analyze the optical properties of polar stratospheric clouds, the refractive indices of vapor-deposited ice films were measured versus substrate temperature from 35-140 K and H_2O pressure from 1.9×10^{-7}-9.5×10^{-5} Torr using optical interference techniques. The refractive indices were measured for ice films deposited on a cooled, single-crystal Al_2O_3 substrate in vacuum. Ice densities were calculated from these refractive indices using the Lorentz-Lorenz relationship. Above 120 K, the ice films had a refractive index of n=1.31 and a density of ρ=0.93 g/cm^3. Significantly lower refractive indices and densities were found at lower temperatures and higher H_2O fluxes that were consistent with microporous ices. Above 35 K, the refractive index and density progressively increased with increasing temperature and decreasing H_2O flux. The ice densities observed can be explained qualitatively using a ballistic deposition model. Estimates are also obtained for the surface diffusion of H_2O on vapor-deposited ice. (Auth. mod.)

50-3097

Simple model to estimate atmospheric concentrations of aerosol chemical species based on snow core chemistry at Summit, Greenland.
Bergin, M.H., Davidson, C.I., Dibb, J.E., Jaffrezo, J.L., Kuhns, H.D., Pandis, S.N., *Geophysical research letters,* Dec. 15, 1995, 22(24), p.3517-3520, 17 refs.
Climatology, Atmospheric composition, Aerosols, Sedimentation, Fog, Ice sheets, Ice cores, Snow composition, Chemical analysis, Sampling, Mathematical models, Greenland—Summit

50-3098

Polar ice stratigraphy from laser-light scattering: scattering from ice.
Ram, M., Illing, M., Weber, P., Koenig, G., Kaplan, M., *Geophysical research letters,* Dec. 15, 1995, 22(24), p.3525-3527, 8 refs.
Ice physics, Climatology, Ice sheets, Ice cores, Impurities, Stratigraphy, Aerosols, Dust, Lasers, Light scattering, Ice optics

50-3099

Classical and quantum mechanical studies of ice Ih near the melting temperature.
Gai, H.D., Schenter, G.K., Garrett, B.C., *Journal of chemical physics,* Jan. 8, 1996, 104(2), p.680-685, 21 refs.
Ice physics, Ice melting, Melting points, Water structure, Hydrogen bonds, Molecular energy levels, Thermodynamic properties, Computerized simulation, Temperature effects

50-3100

GCM response to an antarctic polynya.
Glowienka-Hense, R., *Contributions to atmospheric physics,* Nov. 1995, 68(4), p.303-317, 23 refs.
Atmospheric boundary layer, Climatology, Air water interactions, Polynyas, Sea ice distribution, Atmospheric circulation, Heat flux, Mathematical models, Simulation, Antarctica—Weddell Sea
The sensitivity of the Southern Hemisphere circulation to a Weddell Sea polynya is investigated with an atmospheric general circulation model. Two simulations, one with standard sea ice distribution and one with a patch of open water (a polynya) in the sea ice of the eastern Weddell Sea, are made. The mean temperature and geopotential responses are comparable to former sea ice anomaly experiments, though with much larger sea ice anomalies. The response is much stronger than the response to a Kara Sea polynya. The lower layer of the atmosphere above the polynya is warmed and the upper layer is cooled, as is the whole troposphere equatorward of the polar region. The pole-to-equator geopotential gradient is diminished. The gradient between the mid-latitude trough and the subtropical ridge, however, is stronger in the case of the Weddell Sea polynya. The transient synoptic eddy heat transport is strongly enhanced in the case of the polynya. This is different from a previous Kara Sea experiment, where the baroclinic heat transport was diminished. (Auth. mod.)

50-3101

Modeling of backscattering by non-spherical ice particles for the interpretation of cloud radar signals at 94 GHz. An error analysis.
Okamoto, H., Macke, A., Quante, M., Raschke, E., *Contributions to atmospheric physics,* Nov. 1995, 68(4), p.319-334, With German summary. 47 refs.
Clouds (meteorology), Remote sensing, Cloud physics, Ice crystal optics, Ice crystal size, Ice dielectrics, Polarization (charge separation), Backscattering, Radiance, Radar echoes, Analysis (mathematics)

50-3102

Equivalence of the sound velocity in water and ice at mesoscopic wavelengths.
Ruocco, G., et al, *Nature,* Feb. 8, 1996, 379(6565), p.521-523, 17 refs.
Sound waves, Sound transmission, X ray diffraction, Water, Ice

50-3103

Satellite confirmation of the dominance of chlorofluorocarbons in the global stratospheric chlorine budget.

Russell, J.M., III, Luo, M.Z., Cicerone, R.J., Deaver, L.E., *Nature*, Feb. 8, 1996, 379(6565), p.526-529, 37 refs.

Atmospheric composition, Chemical composition, Stratosphere, Hydrocarbons

50-3104

Proceedings of the 52nd annual Eastern Snow Conference, Toronto, Ontario, June 7-8, 1995.

Eastern Snow Conference, Albert, M.R., ed, Taylor, S., ed, MP 3767, 1995, 263p., Refs. passim. For individual papers see 50-3105 through 50-3131.

Snow surveys, Snow cover distribution, Snow hydrology, Snowmelt, Snow cover effect, Snow air interface, Snow heat flux, Snow composition

50-3105

Mapping snow cover during the BOREAS winter experiment.

Hall, D.K., Foster, J.L., Chang, A.T.C., Brown, K.S., Riggs, G.A., *Eastern Snow Conference. Proceedings*, 1995, 52nd, p.1-10, 10 refs.

Snow surveys, Snow cover distribution, Forest land, Forest canopy, Vegetation factors, Terrain identification, Mapping, Spaceborne photography, Image processing, Canada—Saskatchewan—Prince Albert National Park

50-3106

Determination of snowcovered area using ERS-1 C-VV SAR imagery on two small test sites in southern Ontario.

Seglenieks, F., Dyke, S., Soulis, E.D., Kouwen, N., *Eastern Snow Conference. Proceedings*, 1995, 52nd, p.11-20, 12 refs.

Snow surveys, Snow cover distribution, Terrain identification, Spaceborne photography, Synthetic aperture radar, Image processing, Statistical analysis, Canada—Ontario

50-3107

SSM/I time series observations of Great Lakes ice and snow.

Pilant, D., *Eastern Snow Conference. Proceedings*, 1995, 52nd, p.21-28, 9 refs.

Lake ice, Ice surveys, Ice detection, Ice conditions, Ice cover effect, Lake effects, Snow surveys, Snow depth, Snow accumulation, Spaceborne photography, Radiometry, Great Lakes

50-3108

Distributed snow process modeling: an image processing approach.

Davis, R.E., McKenzie, J.C., Jordan, R.E., MP 3768, *Eastern Snow Conference. Proceedings*, 1995, 52nd, p.29-38, 14 refs.

Snow surveys, Snow cover distribution, Snow hydrology, Snowmelt, Snow heat flux, Weather forecasting, Runoff forecasting, Terrain identification, Spaceborne photography, Computerized simulation, Image processing

This paper reports on an approach to spatially distribute a snow process model by segmenting images of land cover, terrain and snow properties. A small 1.7-ha study area with an existing database was selected for this preliminary evaluation. The methodology was carried out over a relatively flat valley bottom at Camp Grayling, MI. Meteorological measurements on two sides of the area showed only small differences, so uniform meteorological variables were assumed over the site. Initial snow cover conditions were reconstructed and distributed over the area using snow maps and sparse snow pit measurements. One-meter resolution terrain, soil, vegetation and snow type maps were individually processed into class maps. These layers were then combined to produce a segmented class map, where the attributes from the data layers were known for each class. A one-dimensional model of snow processes was run for each class; the results were then mapped back into images. Shallow snow conditions provided high sensitivity of ablation patterns to meteorological conditions over a 72-hour period. Model performance was assessed by comparing predicted and observed ablation patterns. Error in total snow-covered area was less than 9%. However, the location errors were greater (predicted snow where no snow was observed and observed snow where no snow was predicted). Extensive error analysis was not justified because of the lack of multiple point measurements of snow properties.

50-3109

Preliminary investigation of WSR-88D data for winter hydrometeorological events in upstate New York.

Houck, R.E., Waldstreicher, J.S., Hassett, J.M., Blottman, P.F., *Eastern Snow Conference. Proceedings*, 1995, 52nd, p.39-50, 18 refs.

Snowstorms, Snowfall, Snow accumulation, Snow water equivalent, Lake effects, Weather forecasting, Precipitation gages, Radar echoes, United States—New York

50-3110

Pixel-scale ground snow survey for passive microwave study of the arctic snow cover.

Woo, M.K., Walker, A., Yang, D., Goodison, B., *Eastern Snow Conference. Proceedings*, 1995, 52nd, p.51-57, 6 refs.

Snow surveys, Snow cover distribution, Snow depth, Snow density, Snow water equivalent, Spaceborne photography, Terrain identification, Radiometry, Radio echo soundings, Image processing, Canada—Northwest Territories—Ellesmere Island

50-3111

Use of a GIS to develop a stratified snow survey in a mountainous agricultural landscape.

Pierson, D., Kick, J.W., *Eastern Snow Conference. Proceedings*, 1995, 52nd, p.59-68, 9 refs.

Snow surveys, Snow cover distribution, Snow depth, Snow density, Snow water equivalent, Computerized simulation, Statistical analysis, United States—New York

50-3112

Spatial and temporal variability of North American snow cover, 1971-1992.

Brown, R.D., *Eastern Snow Conference. Proceedings*, 1995, 52nd, p.69-78, 28 refs.

Snow surveys, Snow cover distribution, Snow line, Snow cover effect, Snow air interface, Snow heat flux, Atmospheric circulation, Climatic factors, Statistical analysis

50-3113

Bidirectional reflectance measurements of two snow types.

Taylor, S., Koh, G., Davis, R.E., Fisk, D.J., MP 3769, *Eastern Snow Conference. Proceedings*, 1995, 52nd, p.79-84, 9 refs.

Snow surveys, Snow cover structure, Snow morphology, Snow surface, Snow density, Snow heat flux, Snow optics, Albedo, Radiometry, Radar echoes

Normalized reflectance measurements of snow were made at visible and near-infrared wavelengths. Measurements at 5 zenith and 14 azimuth angles were made to calculate the bidirectional reflectance distribution functions (BRDF) of different snow types. The snow density and grain size were obtained to relate the physical and spectral properties of the snow cover. The spectral measurements show significant anisotropy in the BRDF of the two snow types discussed in this paper. Implications of these results for energy budget calculations of snow covers and remote characterization of snow cover properties are discussed.

50-3114

Scaling snowdrift development rate.

Lever, J.H., Haehnel, R.B., MP 3770, *Eastern Snow Conference. Proceedings*, 1995, 52nd, p.85-94, 41 refs.

Snowdrifts, Snow erosion, Wind erosion, Snow air interface, Snow loads, Snow fences, Wind tunnels, Environmental tests, Mathematical models

For successful snowdrift modeling, measured drift shapes should be geometrically similar to full-scale ones and develop at rates that scale in a known manner. Consensus exists on most modeling methods and similitude requirements needed to meet these objectives. A notable exception is the manner to scale drift development rates. This paper presents the authors' rationale for rate scaling based on independent model and prototype mass-transport measurements, as originally proposed by Anno in 1984. They validate this approach by comparing the rate of drift development for a model Wyoming snow fence with corresponding field data. Anno's method yields excellent agreement, while alternatives differ substantially.

50-3115

Accuracy of Tretyakov precipitation gauge: result of WMO intercomparison.

Yang, D.Q., Bates, R.E., Pangburn, T., MP 3771, *Eastern Snow Conference. Proceedings*, 1995, 52nd, p.95-106, 36 refs.

Snowfall, Blowing snow, Precipitation gages, Snow fences, Wind factors, Weather stations, Statistical analysis

From 1986 to 1993, the accuracy and performance of the Tretyakov gauge was evaluated during the WMO Solid Precipitation Measurement Intercomparison at 11 stations in Canada, USA, Russia, Germany, Finland, Romania and Croatia. The Intercomparison data for the Tretyakov gauge were compiled from measurements made at these WMO Intercomparison sites. These data represent a variety of climate, terrain and exposure. The effects of environmental factors, such as wind speed, wind direction, type of precipitation and temperature, on gauge catch were investigated. Wind speed was found to be the most important factor determining gauge catch and air temperature had a secondary effect, when precipitation was classified into snow, mixed and rain. The results of the analysis of gauge catch ratio vs. wind speed and temperature on a daily time step are presented for various types of precipitation. Independent checks of the correction equations against the DFIR (Double Fence Intercomparison Reference) have been conducted at the 11 Intercomparison stations and a good agreement (difference less than 10%) has been obtained. The use of such adjustment procedures should significantly improve the accuracy and homogeneity of gauge-measured precipitation data over large regions of the former USSR and central Europe.

50-3116

Cost-effective snow fence usage—D.I.M.E.

Baker, H.A., Williams, C.J., *Eastern Snow Conference. Proceedings*, 1995, 52nd, p.107-114, 2 refs.

D.I.M.E. is an abbreviation of Design, Install, Monitor and Evaluate.

Snowdrifts, Snow fences, Road maintenance, Cost analysis

50-3117

Wastewater treatment through atomizing freeze-crystallization.

White, J.A., Frere, D., *Eastern Snow Conference. Proceedings*, 1995, 52nd, p.115-125, 14 refs.

Water treatment, Waste treatment, Water chemistry, Artificial freezing, Artificial snow, Snow manufacturing, Cold weather operation

50-3118

Field trials evaluating prewetting salt with liquid calcium chloride for snow and ice control on urban streets.

Dunn, W., Brinkhof, H., Miner, W.M., *Eastern Snow Conference. Proceedings*, 1995, 52nd, p.127-134.

Road icing, Streets, Salting, Chemical ice prevention, Snow removal, Road maintenance, Canada—Ontario—Ottawa

50-3119

Developments in airport ice control chemicals.

Townshend, T., *Eastern Snow Conference. Proceedings*, 1995, 52nd, p.135-137.

Runways, Road icing, Chemical ice prevention, Urea, Salting, Cost analysis, Canada

50-3120

Preliminary study of melting snow and river ice by dusting using leaf mulch.

Haehnel, R.B., Clark, C.H., MP 3772, *Eastern Snow Conference. Proceedings*, 1995, 52nd, p.139-149, 15 refs.

River ice, Ice control, Ice deterioration, Snow ice interface, Snow melting, Ice melting, Artificial melting, Dusting

Dusting ice with a dark material has been used on northern rivers to weaken river ice, with the objective of preventing ice jams during spring runoff. River sand, coal slag and fly ash have been commonly used to melt ice. However, introduction of these materials to rivers can adversely affect the fish habitat. The authors explored the use of leaf mulch as an alternative dusting material that can be used in place of sand, etc. This report summarizes the field work carried out by the U.S. Army Cold Regions Research and Engineering Laboratory (CRREL) during the springs of 1993 of 1994, studying the effectiveness of leaf mulch and other biodegradable dusting materials in comparison to previously used dusting materials. It was found that the leaf mulch is effective in lowering the albedo of the white ice surface from 0.5 to 0.2, which is comparable to the albedo of coal slag or sand on ice. During the spring of 1994 leaf mulch was spread on the ice using a hydroseeder. It was possible to dust 8000 m^2 (2 acres) in about 20 minutes using the hydroseeder. Field tests showed that leaf mulch is effective at melting the snow cover on top of the ice. This allows the sunlight to start melting the dusted ice sooner than the undusted ice. Leaf mulch was as effective at melting the ice cover as sand and other materials.

50-3121
River ice control and fish habitat restoration: mutual interests and benefits.
Lever, J.H., Nislow, K., MP 3773, *Eastern Snow Conference. Proceedings*, 1995, 52nd, p.151-158, 39 refs.
River ice, Ice cover effect, Ice jams, Ice control, Ice booms, Hydraulic structures, Flood control, Ecology, Environmental protection
To develop environmentally acceptable ice control measures for small rivers, researchers must screen alternatives for their impact on river ecosystems, including fish populations. Similarly, to develop structures to improve fish habitat in cold regions, one must understand how these structures alter ice regime and thence how the fish respond. Unfortunately, there is little information to determine how altering ice regime, for either ice control or habitat restoration, affects fish. This paper explores several areas of mutual interest to river engineers and ecologists. These interests begin with a need to quantify linkages between ice regime and ecological consequences. The authors also discuss the convergence of needs to control ice for the benefit of both aquatic and human communities and suggest specific topics for future research.

50-3122
Snowpack study in school.
Chisholm, R.M., *Eastern Snow Conference. Proceedings*, 1995, 52nd, p.159-161, 19 refs.
Snow cover structure, Metamorphism (snow), Education

50-3123
Hydrometeorological relationships in a glacierized catchment in the Canadian high Arctic.
Wolfe, P.M., English, M.C., *Eastern Snow Conference. Proceedings*, 1995, 52nd, p.163-173, 19 refs.
Glacial hydrology, Glacial meteorology, Glacier melting, Snow ice interface, Snowmelt, Slush, Subglacial drainage, Stream flow, Runoff forecasting, Statistical analysis, Canada—Northwest Territories—Ellesmere Island

50-3124
Dissolution kinetics, transit times through subglacial hydrological pathways and diurnal variations of solute content of meltwaters draining from an Alpine glacier.
Collins, D.N., *Eastern Snow Conference. Proceedings*, 1995, 52nd, p.175-188, 18 refs.
Glacial hydrology, Subglacial drainage, Meltwater, Outwash, Suspended sediments, Hydrogeochemistry, Water chemistry, Diurnal variations, Switzerland

50-3125
Hydrological and hydrochemical response of a small Canadian shield catchment to late winter rain-on-snow events.
Maclean, R.A., English, M.C., Schiff, S.L., *Eastern Snow Conference. Proceedings*, 1995, 52nd, p.189-209, 48 refs.
Watersheds, Rain, Snow hydrology, Snow composition, Snowmelt, Stream flow, Seepage, Ground water, Hydrogeochemistry, Water chemistry, Canada—Ontario

50-3126
Equilibrium zone on polar glaciers.
Adams, W.P., Cogley, J.G., Ecclestone, M.A., *Eastern Snow Conference. Proceedings*, 1995, 52nd, p.211-219, 13 refs.
Glacier surveys, Glacier mass balance, Glacier alimentation, Snow ice interface, Snow line, Canada—Northwest Territories—Axel Heiberg Island

50-3127
Winter methane dynamics beneath ice and in snow in a temperate poor fen.
Melloh, R.A., Crill, P.M., MP 3774, *Eastern Snow Conference. Proceedings*, 1995, 52nd, p.221-228, 23 refs.
Wetlands, Peat, Ice cover effect, Soil chemistry, Soil air interface, Snowfall, Snow composition, Snow cover effect, Snow air interface, Nutrient cycle, United States—New Hampshire
Winter's influence on methane (CH_4) stored in pore water and emitted through snow was investigated in a temperate poor fen in New Hampshire over two winters (1993-94, 1994-95). CH_4 accumulated beneath ice layers (1 cm) deposited by freezing rain, resulting in snow pore air mixing ratios as high as 140 ppmv the first winter and 600 ppmv the second. An early winter snow crust of 300 kg/m^3 caused no discontinuity in a linear mixing ratio profile and therefore was not observed to retard snowpack emissions. CH_4 concentration depth profiles in pore water steepen and concentrations increase by as much as 400 μM at the 10- and 20-cm depths as the ice cover forms. This suggests that the peat-ice cover plays an important role in CH_4 buildup in pore water by limiting transport of gases between the peat and the atmosphere. Pore water concentrations gradually decline through late winter. The seasonality of dissolved CH_4 in pore water over two winters and one summer shows an average annual amplitude of 1.3 g CH_4/m^2 (25- to 75-cm depth range), with a winter maximum of 4.7 g CH_4/m^2. Emissions during the winter with average snowfall accounted for a larger percentage (9.2% in 1993-94) of total annual emission than did the winter with below-average snowfall and warmer air temperature (2% in 1994-95). Emissions averaged 56 and 26 mg/m^2/day during the first and second winter (Dec., Jan. and Feb.), respectively.

50-3128
Nitrate transport in snowmelt in the Green Mountains, northern Vermont.
Daly, D.M., *Eastern Snow Conference. Proceedings*, 1995, 52nd, p.229-238, 42 refs.
Watersheds, Snow hydrology, Snow composition, Snowmelt, Hydrogeochemistry, Stream flow, Water chemistry, Nutrient cycle, United States—Vermont

50-3129
Snow-induced thermal variations around a single conifer tree.
Hardy, J.P., Albert, M.R., MP 3775, *Eastern Snow Conference. Proceedings*, 1995, 52nd, p.239-247, 19 refs.
Forest land, Forest canopy, Vegetation factors, Interception, Snow hydrology, Snow heat flux, Snow temperature, Snow cover effect, Frozen ground temperature, Frost penetration
The influence of trees on the ground thermal regime is important to the overall winter energy exchange in a snow-covered, forested watershed. In this paper, spatial zones around a single conifer tree are defined and examined for their controls on the snow cover, snow/ground interface temperatures and frozen ground extent. A large white spruce (*Picea glauca*), approximately 18 m tall with a crown diameter of 7.5 m, and located in northern Vermont, was the subject of this study. The tree was instrumented with thermistors to measure the snow/ground interface temperature between the tree trunk and 6 m from the tree into undisturbed snow. Four distinct zones around the conifer are defined that affect snow distribution characteristics: adjacent to the trunk, the tree well, tree crown perimeter, and the unaffected area away from the tree. At the time of peak snow accumulation and during the ablation season, snow depth and density profiles were measured. The area beneath the canopy accumulated 34% of the snow accumulated in the undisturbed zone. By the end of the ablation season, the depth of snow under the canopy had decreased to 18% of the undisturbed snow depth. Tree and branch characteristics of spruce in this temperate climate resulted in a different snow depth profile when compared to previous empirical relationships around a single conifer. Less snow beneath the canopy led to colder snow ground interface temperatures than measured in undisturbed snow. The depth of frozen ground in the different zones was modeled using a simple analytical solution that showed deeper frost penetration in the tree well than beneath the undisturbed snow.

50-3130
Controls of canopy structure on snowmelt rates in the boreal forest.
Metcalfe, R.A., Buttle, J.M., *Eastern Snow Conference. Proceedings*, 1995, 52nd, p.249-257, 13 refs.
Taiga, Forest land, Forest canopy, Snow hydrology, Snowmelt, Snow heat flux, Snow air interface, Snow cover effect, Water balance, Global change, Canada—Manitoba

50-3131
Exclusion of sodium chloride from ice during freezing.
Cragin, J.H., MP 3776, *Eastern Snow Conference. Proceedings*, 1995, 52nd, p.259-262, 6 refs.
Salt water, Brines, Artificial freezing, Ice formation, Salt ice, Ice salinity, Ice water interface, Desalting
An apparatus was designed and built to freeze aqueous solutions directionally at a constant rate with a planar interface. Solutions of 1.65 per mill NaCl (28.2 mM) were then frozen with stirring (to prevent brine concentration at the ice/water boundary) at 2.5 mm/hr, a rate commensurate with that found in natural water systems. Samples were taken along the growth (time) axis and chemically analyzed to determine ion distribution coefficients, a measure of the efficiency of salt exclusion. Distribution coefficients were found to vary with salt concentration and ice crystallography.

50-3132
Avalanche countermeasure operations in the Maekura district. [Maekura chiiki nadare taisaku jigyo ni tsuite]
Takahashi, Y., Fujita, T., Ebina, K., Kensetsŭsho Hokuriku chiho kensetsukyoku kannai gijutsu kenkyukai ronbunshu (Ministry of Construction. Hokuriku Regional Construction Bureau. Technical research meeting, Niigata, July 16-17, 1992. Proceedings), Niigata, Japan, 1992, p.5-8, In Japanese.
Avalanche engineering, Avalanche mechanics, Snow loads, Snow retention, Snow fences, Japan

50-3133
Study on the actual conditions of acid snow in Hokuriku District. [Hokuriku chiho no sanseisetsu chosa no jittai chosa ni tsuite]
Yoshikawa, S., Kensetsusho Hokuriku chiho kensetsukyoku kannai gijutsu kenkyukai ronbunshu (Ministry of Construction. Hokuriku Regional Construction Bureau. Technical research meeting, Niigata, July 16-17, 1992. Proceedings), Niigata, Japan, 1992, p.21-24, In Japanese.
Snow impurities, Snow composition, Air pollution, Scavenging, Japan

50-3134
Weather shelter (A-type) operations. [Ueza sheruta (A-gata) no shiko ni tsuite]
Kobayashi, Y., Oishi, K., Sakai, K., Kensetsusho Hokuriku chiho kensetsukyoku kannai gijutsu kenkyukai ronbunshu (Ministry of Construction. Hokuriku Regional Construction Bureau. Technical research meeting, Niigata, July 16-17, 1992. Proceedings), Niigata, Japan, 1992, p.47-52, In Japanese.
Bridges, Portable shelters, Covering, Cold weather construction, Weatherproofing, Frost protection, Snow removal, Japan

50-3135
Development of pneumatic snow removal technology. [Yuki no kuki yuso gijutsu no kaihatsu]
Kamimura, H., Maeda, T., Ikegami, N., Kensetsusho Hokuriku chiho kensetsukyoku kannai gijutsu kenkyukai ronbunshu (Ministry of Construction. Hokuriku Regional Construction Bureau. Technical research meeting, Niigata, July 16-17, 1992. Proceedings), Niigata, Japan, 1992, p.53-56, In Japanese. 2 refs.
Snow removal equipment, Road maintenance, Ducts, Air flow, Japan

50-3136
Large-scale earth and rock flows on the Himekawa, Sasakawa, and Urakawa rivers. [Himekawa Sasakawa Urakawa ni hassei shita daikibo dosekiryu ni tsuite]
Watanabe, N., Kobayashi, H., Sakurai, W., Kensetsusho Hokuriku chiho kensetsukyoku kannai gijutsu kenkyukai ronbunshu (Ministry of Construction. Hokuriku Regional Construction Bureau. Technical research meeting, Niigata, July 16-17, 1992. Proceedings), Niigata, Japan, 1992, p.99-104, In Japanese. 2 refs.
Snowmelt, Snow cover effect, Slope stability, Mudflows, Landslides, Avalanche formation, Avalanche erosion, Avalanche deposits, Japan

50-3137
Performance of equipment for traffic report management systems. [Doro joho kanri shisutemu seibi koka ni tsuite]
Obayashi, K., Kitamura, K., Hayashi, M., Kensetsusho Hokuriku chiho kensetsukyoku kannai gijutsu kenkyukai ronbunshu (Ministry of Construction. Hokuriku Regional Construction Bureau. Technical research meeting, Niigata, July 16-17, 1992. Proceedings), Niigata, Japan, 1992, p.251-256, In Japanese.
Road icing, Snowstorms, Weather forecasting, Safety, Data transmission, Road maintenance, Highway planning, Japan

50-3138

Improvement of sidewalk snow removal within urban areas. [Toshi ken ni okeru hodo josetsu no koritsuka ni tsuite]

Takahashi, S., Uesugi, S., Maeda, M., Kensetsusho Hokuriku chiho kensetsukyoku kannai gijutsu kenkyukai ronbunshu (Ministry of Construction. Hokuriku Regional Construction Bureau. Technical research meeting, Niigata, July 16-17, 1992. Proceedings), Niigata, Japan, 1992, p.263-268, In Japanese.

Sidewalks, Snow removal, Urban planning, Road maintenance, Japan

50-3139

Snow melting on walkways at waterworks. [Ryusuiko ni yoru hodo shosetsu ni tsuite]

Mikazuki, S., Maehara, M., Hiba, K., Kensetsusho Hokuriku chiho kensetsukyoku kannai gijutsu kenkyukai ronbunshu (Ministry of Construction. Hokuriku Regional Construction Bureau. Technical research meeting, Niigata, July 16-17, 1992. Proceedings), Niigata, Japan, 1992, p.269-274, In Japanese. 2 refs.

Hydraulic structures, Snow removal, Snow melting, Artificial melting, Japan

50-3140

Winter road traffic census. [Toki doro kotsu sensasu ni tsuite]

Ueki, S., Matsudaira, N., Kensetsusho Hokuriku chiho kensetsukyoku kannai gijutsu kenkyukai ronbunshu (Ministry of Construction. Hokuriku Regional Construction Bureau. Technical research meeting, Niigata, July 16-17, 1992. Proceedings), Niigata, Japan, 1992, p.275-280, In Japanese.

Road icing, Snowstorms, Safety, Highway planning, Road maintenance, Japan

50-3141

Development of easily handled sidewalk snow removal equipment. [Kani sosa-gata hodo josetsu kikai no kaihatsu]

Kamimura, H., Maeda, T., Ikegami, N., Nakamura, M., Kensetsusho Hokuriku chiho kensetsukyoku kannai gijutsu kenkyukai ronbunshu (Ministry of Construction. Hokuriku Regional Construction Bureau. Technical research meeting, Niigata, July 16-17, 1992. Proceedings), Niigata, Japan, 1992, p.355-360, In Japanese.

Sidewalks, Snow removal equipment, Japan

50-3142

Development of equipment for pulverizing solid deicers. [Koketsu toketsu boshizai funsai sochi no kaihatsu ni tsuite]

Inui, T., Hashimoto, T., Kensetsusho Hokuriku chiho kensetsukyoku kannai gijutsu kenkyukai ronbunshu (Ministry of Construction. Hokuriku Regional Construction Bureau. Technical research meeting, Niigata, July 16-17, 1992. Proceedings), Niigata, Japan, 1992, p.361-364, In Japanese.

Chemical ice prevention, Salting, Road maintenance, Japan

50-3143

Development of snow removal equipment for median strips. [Chuo bunritai josetsu sochi no kaihatsu ni tsuite]

Inui, T., Himeno, T., Kensetsusho Hokuriku chiho kensetsukyoku kannai gijutsu kenkyukai ronbunshu (Ministry of Construction. Hokuriku Regional Construction Bureau. Technical research meeting, Niigata, July 16-17, 1992. Proceedings), Niigata, Japan, 1992, p.365-370, In Japanese.

Snow removal equipment, Road maintenance, Japan

50-3144

Comments on the crystal structure of solid trichlorofluoromethane.

Prado, P., Armstrong, R.L., Powell, B., *Canadian journal of physics*, Sep.-Oct. 1995, 73(9-10), p.650-652, With French summary. 11 refs.

Cryogenics, Solutions, Frozen liquids, Neutron diffraction, Profiles, Spectra, Crystals, Molecular structure

50-3145

Flux of dense cold overflow water southeast of Iceland.

Saunders, P.M., *Journal of physical oceanography*, Jan. 1996, 26(1), p.85-95, 15 refs.

Oceanography, Subpolar regions, Ocean currents, Water transport, Hydrography, Turbulent exchange, Moorings, Seasonal variations, Iceland Sea

50-3146

Northern exposures.

Thomson, K.S., *American scientist*, Nov.-Dec. 1993, 81(6), p.522-525, 14 refs.

Climatology, Pleistocene, Climatic changes, Stability, Glacier oscillation, Periodic variations

50-3147

What makes permafrost permanent?

Schoonmaker, D., *American scientist*, Nov.-Dec. 1993, 81(6), p.527-528.

Permafrost physics, Frozen ground thermodynamics, Permafrost depth, Permafrost thermal properties, Active layer, Stability, Permafrost transformation, Environmental impact

50-3148

Field observations of microwave backscatter from Weddell Sea ice.

Lytle, V.I., Jezek, K.C., Gogineni, S.P., Hosseinmostafa, A.R., *International journal of remote sensing*, Jan. 10, 1996, 17(1), p.167-180, 22 refs.

Sea ice, Microwaves, Radar echoes, Snow cover distribution, Antarctica—Weddell Sea

Microwave backscatter experiments from Weddell Sea ice are described. The objectives of these measurements were to document microwave signatures of antarctic ice morphologies and to determine the geophysical processes responsible for microwave scattering. The frequency of 13.5 GHz is similar to that used on operational satellite radar altimeters. Two characteristics of the snow cover dominated the measured backscatter coefficients (σ^0). A thick snow cover increased σ^0 at oblique incidence due to volume scatter. Slush at the snow/ice interface increased σ^0 by about 8 dB at normal incidence because the smooth surface of the slush layer represents a stronger dielectric boundary. These results indicate that it may be possible to monitor the formation and subsequent freezeup of this slush layer using satellite radars. Field observations have shown that slush can be a significant source of new ice formation, contributing as much as 16% to the total sea ice volume found in the Weddell Sea. (Auth. mod.)

50-3149

DEM corrected ERS-1 SAR data for snow monitoring.

Guneriussen, T., Johnsen, H., Sand, K., *International journal of remote sensing*, Jan. 10, 1996, 17(1), p.181-195, 16 refs.

Radar echoes, Synthetic aperture radar, Snow cover distribution, Snow melting, Snow water content, Mountains, Norway

50-3150

Hydrology of a polythermal glacier, Erikbreen, northern Spitsbergen.

Vatne, G., Etzelmüller, B., Sollid, J.L., Ødegård, R.S., *Nordic hydrology*, 1995, 26(3), p.169-190, Refs. p.186-190.

Glacial hydrology, Glacier melting, Meltwater, Suspended sediments, Sediment transport, Subglacial drainage, Flow measurement, Glacier beds, Ice solid interface, Sampling, Seasonal variations, Norway—Spitsbergen

50-3151

Individual-based model of alpine plant distributions.

Humphries, H.C., Coffin, D.P., Lauenroth, W.K., *Ecological modelling*, Jan. 1996, 84(1-3), p.99-126, 60 refs.

Plant ecology, Ecosystems, Alpine landscapes, Vegetation patterns, Biomass, Snow cover effect, Revegetation, Statistical analysis, Models, Climatic factors

50-3152

Biomass burning signatures in the atmosphere and snow at Summit, Greenland: an event on 5 August 1994.

Dibb, J.E., et al, *Atmospheric environment*, Feb. 1996, 30(4), p.553-561, 32 refs.

Atmospheric composition, Climatology, Ice sheets, Snow composition, Snow impurities, Aerosols, Biomass, Turbulent diffusion, Snow air interface, Ion density (concentration), Origin, Greenland—Summit

50-3153

Characteristics of sound reflected from sea ice.

Aleksandrov, I.A., Samorukov, S.B., *Acoustical physics*, July-Aug. 1996, 41(4), p.479-484, Translated from Akusticheskiĭ zhurnal. 2 refs.

Sea ice, Ice acoustics, Underwater acoustics, Ice water interface, Wave propagation, Reflectivity, Spectra, Statistical analysis, Ocean bottom, Viscoelasticity

50-3154

Meteorological satellite instrumentation.

Kidder, S.Q., Vonder Haar, T.H., Satellite meteorology—an introduction, San Diego, Academic Press, Inc., 1995, p.87-144, Refs. p.141-144.

DLC QC879.5.K53

Remote sensing, Geophysical surveys, Spacecraft, Radiometry, Sensors, Design

This paper examines the sensor instrumentation of contemporary satellite platforms, including those employed for meteorological surveys of polar regions. Radiometry calibration, specifications and design parameters are presented.

50-3155

Interpretation of digital parasound echosounder records of the eastern Arctic Ocean on the basis of sediment physical properties. [Interpretation digitaler Parasound Echolotaufzeichnungen im östlichen Arktischen Ozean auf der Grundlage physikalischer Sedimenteigenschaften]

Bergmann, U., *Berichte zur Polarforschung*, 1995, No.183, 164p., In German with English summary. Refs. p.156-164.

Sediments, Core samplers, Seismic surveys, Porosity, Arctic Ocean

50-3156

Laptev Sea System: Expeditions in 1994.

Kassens, H., ed, *Berichte zur Polarforschung*, 1995, No.182, 195p., The volume comprises *TRANSDRIFT II* Expedition to the Laptev Sea by H. Kassens and I. Dmitrenko and Expedition to the Lena River in July and August 1994 by V. Rachold, J. Hermel, and V.N. Korotaev. Refs. p.110-112 and p.191.

Marine biology, Chemical composition, Hydrology, Optical properties, Light transmission, Water pollution, Sediments, Russia—Laptev Sea, Russia—Lena River

50-3157

Expedition ARKTIS X/1 of the research vessel *Polarstern* in 1994. [Die Expedition ARKTIS X/1 des Polarforschungsschiffe *Polarstern* 1994]

Fahrbach, E., ed, *Berichte zur Polarforschung*, 1995, No.181, 79p. + Station List, In German with English summary.

Marine biology, Sea water, Chemical composition, Sea ice distribution, Remote sensing, Hydrography, Greenland Sea

50-3158

Proceedings.

International Conference on Engineering and Development in Northern Regions, Sapporo, Japan, Jan. 31-Feb. 2, 1983, Sapporo, Hokkaido Development Engineering Center, 1984, 225p., Refs. passim. For selected papers see 40-1681 and 50-3159 through 50-3166.

Cold weather construction, Cold weather performance, Winter concreting, Buildings, Radiant heating, Heat recovery, Nuclear power

50-3159

Sulphur concrete for use in cold regions.

Vroom, A.H., International Conference on Engineering and Development in Northern Regions, Sapporo, Japan, Jan. 31-Feb. 2, 1983, Sapporo, Hokkaido Development Engineering Center, 1984, p.53-57, 4 refs.

Concrete admixtures, Precast concretes, Concrete strength, Winter concreting

50-3160

Energy saving building systems based on advanced hollow core slab technology.

Kajava, A., International Conference on Engineering and Development in Northern Regions, Sapporo, Japan, Jan. 31-Feb. 2, 1983, Sapporo, Hokkaido Development Engineering Center, 1984, p.93-102.

Buildings, Floors, Walls, Concrete slabs, Cellular concretes, Ventilation, Air conditioning, Thermal insulation, Cold weather performance, Finland

50-3161

Possibilities for industrial cooperation concerning district heating technology.

Juvonen, O.A., International Conference on Engineering and Development in Northern Regions, Sapporo, Japan, Jan. 31-Feb. 2, 1983, Sapporo, Hokkaido Development Engineering Center, 1984, p.111-142.

Buildings, Radiant heating, Heat transmission, Heat pipes, Finland

50-3162

Diesel heat recovery plant related to local heating and electricity production.

Niemi, S., International Conference on Engineering and Development in Northern Regions, Sapporo, Japan, Jan. 31-Feb. 2, 1983, Sapporo, Hokkaido Development Engineering Center, 1984, p.143-160, 1 ref.

Diesel engines, Electric power, Heat recovery, Fuels, Economic development

50-3163

Nuclear energy for district heating.

Bodh, R.M., International Conference on Engineering and Development in Northern Regions, Sapporo, Japan, Jan. 31-Feb. 2, 1983, Sapporo, Hokkaido Development Engineering Center, 1984, p.161-167.

Nuclear power, Radiant heating, Heat transmission, Heat recovery, Sweden

50-3164

Nuclear waste management in Canada.

MacDowall, J., International Conference on Engineering and Development in Northern Regions, Sapporo, Japan, Jan. 31-Feb. 2, 1983, Sapporo, Hokkaido Development Engineering Center, 1984, p.168-181, Figures precede text.

Nuclear power, Radioactive wastes, Waste disposal, Canada

50-3165

Research concerning ice conditions in fairways—Swedish activities.

Lindmark, R., Sandkvist, J., International Conference on Engineering and Development in Northern Regions, Sapporo, Japan, Jan. 31-Feb. 2, 1983, Sapporo, Hokkaido Development Engineering Center, 1984, p.183-191, 17 refs.

Ports, Docks, Ice conditions, Ice control, Ice navigation, Sweden, Bothnia, Gulf

50-3166

Ice shell roof for use in cold areas.

Kokawa, T., International Conference on Engineering and Development in Northern Regions, Sapporo, Japan, Jan. 31-Feb. 2, 1983, Sapporo, Hokkaido Development Engineering Center, 1984, p.193-199, 5 refs.

Snow ice, Artificial freezing, Artificial ice, Ice strength, Snow (construction material), Ice (construction material), Roofs

50-3167

Northern wilderness areas: ecology, sustainability, values.

International Conference on Northern Wilderness Areas, Arctic Centre, University of Lapland, Rovaniemi, Finland, Dec. 7-9, 1994, Sippola, A.L., ed, Alaraudanjoki, P., ed, Forbes, B., ed, Hallikainen, V., ed, *Arctic Centre publications,* 1995, No.7, 438p., Refs. passim. For selected papers see 50-3168 through 50-3178.

Ecology, Ecosystems, Forest land, Trees (plants), Tundra vegetation, Site surveys, Mosses, Lichens, Data processing, Finland

50-3168

Preliminary mycobiota (Aphyllophorales, Fungi) of timberline forests in the West Siberian plateau.

Kotiranta, H., *Arctic Centre publications,* 1995, No.7, International Conference on Northern Wilderness Areas, Arctic Centre, University of Lapland, Rovaniemi, Finland, Dec. 7-9, 1994. Northern wilderness areas: ecology, sustainability, values. Edited by A.L. Sippola, P. Alaraudanjoki, B. Forbes, and V. Hallikainen, p.78-95, 35 refs.

Forest land, Trees (plants), Fungi, Tundra vegetation, Site surveys, Russia—Ural Mountains

50-3169

New protected areas in Russia in the framework of a circumpolar protected area network plan.

Prokosch, P., *Arctic Centre publications,* 1995, No.7, International Conference on Northern Wilderness Areas, Arctic Centre, University of Lapland, Rovaniemi, Finland, Dec. 7-9, 1994. Northern wilderness areas: ecology, sustainability, values. Edited by A.L. Sippola, P. Alaraudanjoki, B. Forbes, and V. Hallikainen, p.284-298, 7 refs.

Environmental protection, International cooperation, Legislation, Russia

50-3170

Regional system of protected natural areas in the north of Western Siberia.

Pokrovskaia, I.V., *Arctic Centre publications,* 1995, No.7, International Conference on Northern Wilderness Areas, Arctic Centre, University of Lapland, Rovaniemi, Finland, Dec. 7-9, 1994. Northern wilderness areas: ecology, sustainability, values. Edited by A.L. Sippola, P. Alaraudanjoki, B. Forbes, and V. Hallikainen, p.299-310, 5 refs.

Environmental protection, Tundra terrain, Taiga, Legislation, Russia—Siberia

50-3171

Wilderness quality mapping in the Euro-Arctic Barents region.

Husby, E., Henry, D., *Arctic Centre publications,* 1995, No.7, International Conference on Northern Wilderness Areas, Arctic Centre, University of Lapland, Rovaniemi, Finland, Dec. 7-9, 1994. Northern wilderness areas: ecology, sustainability, values. Edited by A.L. Sippola, P. Alaraudanjoki, B. Forbes, and V. Hallikainen, p.319-339, 8 refs.

Mapping, Data processing, Remote sensing, Norway, Sweden, Finland, Russia

50-3172

Intralandscape diversity of the flora of the Tazovsky Peninsula.

Khitun, O.V., *Arctic Centre publications,* 1995, No.7, International Conference on Northern Wilderness Areas, Arctic Centre, University of Lapland, Rovaniemi, Finland, Dec. 7-9, 1994. Northern wilderness areas: ecology, sustainability, values. Edited by A.L. Sippola, P. Alaraudanjoki, B. Forbes, and V. Hallikainen, p.365-377, 7 refs.

Plants (botany), Tundra vegetation, Site surveys, Arctic landscapes, Russia—Siberia, Russia—Tazovskiy Peninsula

50-3173

Dry tundra succession in Central Chukotka.

Kucherov, I.B., *Arctic Centre publications,* 1995, No.7, International Conference on Northern Wilderness Areas, Arctic Centre, University of Lapland, Rovaniemi, Finland, Dec. 7-9, 1994. Northern wilderness areas: ecology, sustainability, values. Edited by A.L. Sippola, P. Alaraudanjoki, B. Forbes, and V. Hallikainen, p.378-385, 5 refs.

Tundra vegetation, Tundra terrain, Lichens, Plants (botany), Mosses, Terraces, Moraines, Site surveys, Mountains, Chukotskiy Peninsula, Russia—Amguema River

50-3174

Diversity of pine forests in the Lapland State Reserve, the Kola Peninsula.

Neshataev, V.IU., Neshataeva, V.IU., *Arctic Centre publications,* 1995, No.7, International Conference on Northern Wilderness Areas, Arctic Centre, University of Lapland, Rovaniemi, Finland, Dec. 7-9, 1994. Northern wilderness areas: ecology, sustainability, values. Edited by A.L. Sippola, P. Alaraudanjoki, B. Forbes, and V. Hallikainen, p.386-396, 27 refs.

Trees (plants), Forest land, Site surveys, Mosses, Lichens, Plants (botany), Forest ecosystems, Air pollution, Environmental impact, Russia—Kola Peninsula

50-3175

Algae in terrestrial phytocoenoses of the east European Arctic.

Patova, E., *Arctic Centre publications,* 1995, No.7, International Conference on Northern Wilderness Areas, Arctic Centre, University of Lapland, Rovaniemi, Finland, Dec. 7-9, 1994. Northern wilderness areas: ecology, sustainability, values. Edited by A.L. Sippola, P. Alaraudanjoki, B. Forbes, and V. Hallikainen, p.397-406, 12 refs.

Algae, Tundra vegetation, Ecosystems, Site surveys, Environmental impact, Arctic landscapes, Russia—Novaya Zemlya, Russia—Ural Mountains, Russia—Kolguev, Russia—Vaygach

50-3176

Plant species diversity of Bely Island.

Rebristaia, O.V., *Arctic Centre publications,* 1995, No.7, International Conference on Northern Wilderness Areas, Arctic Centre, University of Lapland, Rovaniemi, Finland, Dec. 7-9, 1994. Northern wilderness areas: ecology, sustainability, values. Edited by A.L. Sippola, P. Alaraudanjoki, B. Forbes, and V. Hallikainen, p.407-414, 6 refs.

Plants (botany), Arctic landscapes, Site surveys, Mosses, Tundra vegetation, Lichens, Russia—Belyy Ostrov, Russia—Kara Sea

50-3177

Materials for a flora of the leafy mosses of the European part of the Northern Urals.

Zheleznova, G.V., Shubina, T.P., *Arctic Centre publications,* 1995, No.7, International Conference on Northern Wilderness Areas, Arctic Centre, University of Lapland, Rovaniemi, Finland, Dec. 7-9, 1994. Northern wilderness areas: ecology, sustainability, values. Edited by A.L. Sippola, P. Alaraudanjoki, B. Forbes, and V. Hallikainen, p.415-420, 11 refs.

Mosses, Plants (botany), Site surveys, Taiga, Mountains, Trees (plants), Russia—Ural Mountains, Russia—Pechora River, Russia—Il'ich River

50-3178

Development of environmental database for the Russian Arctic.

Kaitala, S., *Arctic Centre publications,* 1995, No.7, International Conference on Northern Wilderness Areas, Arctic Centre, University of Lapland, Rovaniemi, Finland, Dec. 7-9, 1994. Northern wilderness areas: ecology, sustainability, values. Edited by A.L. Sippola, P. Alaraudanjoki, B. Forbes, and V. Hallikainen, p.432-433, 5 refs.

Data processing, Research projects, Computer applications, Image processing, Maps, Ecosystems

50-3179

Finnish research programme on climate change; second progress report.

Kanninen, M., ed, Heikinheimo, P., ed, Helsinki, Academy of Finland, 1994, 415p., Refs. passim. For selected papers see 50-3180 through 50-3235.

DLC QC981.8.C5F42 1994

Climatic changes, Global change, Climatic factors, Trees (plants), Carbon dioxide, Ecosystems, Forest land

50-3180

Climate history from tree rings in the subarctic area of Fennoscandia.

Eronen, M., Zetterberg, P., Lindholm, M., Finnish research program on climate change; second progress report. Edited by M. Kanninen and P. Heikinheimo, Helsinki, Academy of Finland, 1994, p.13-19, 15 refs.

DLC QC981.8.C5F42 1994

Subpolar regions, Age determination, Trees (plants), Paleoclimatology

50-3181

Stable carbon isotope ratios in tree rings of pines from northern Finland.

Sonninen, E., Jungner, H., Finnish research program on climate change; second progress report. Edited by M. Kanninen and P. Heikinheimo, Helsinki, Academy of Finland, 1994, p.20-24, 11 refs.

DLC QC981.8.C5F42 1994

Carbon isotopes, Trees (plants), Carbon dioxide, Age determination, Finland

50-3182

10,000-years dynamics of limnic ecosystems and climatic change.

Salonen, V.-P., Meriläinen, J.J., Itkonen, A., Marttila, V., Olander, H., Finnish research program on climate change; second progress report. Edited by M. Kanninen and P. Heikinheimo, Helsinki, Academy of Finland, 1994, p.25-30, 10 refs.

DLC QC981.8.C5F42 1994

Paleoclimatology, Ecosystems, Climatic changes, Lacustrine deposits, Sediments, Global change, Air temperature, Lakes, Ice cover effect, Finland

50-3183

Climatic changes in Northern Europe.

Heino, R., Tuomenvirta, H., Finnish research program on climate change; second progress report. Edited by M. Kanninen and P. Heikinheimo, Helsinki, Academy of Finland, 1994, p.31-36, 6 refs.

DLC QC981.8.C5F42 1994

Climatic changes, Air temperature, Cloud cover, Insolation, Polar atmospheres, Finland

50-3184

Assessment of hydrological changes.

Hiltunen, T., Finnish research program on climate change; second progress report. Edited by M. Kanninen and P. Heikinheimo, Helsinki, Academy of Finland, 1994, p.37-42, 9 Refs.

DLC QC981.8.C5F42 1994

Hydrology, Runoff, Climatic changes, Water balance, Climatic factors, Watersheds, Seasonal variations, Finland

50-3185

Climate models and scenarios.

Fortelius, C., Holopainen, E., Kaurola, J., Ruosteenoja, K., Räisänen, J., Finnish research program on climate change; second progress report. Edited by M. Kanninen and P. Heikinheimo, Helsinki, Academy of Finland, 1994, p.45-51, 5 refs.

DLC QC981.8.C5F42 1994

Climatic changes, Models, Climatology, Atmospheric circulation, Simulation, Carbon dioxide

50-3186

Microclimatic models, estimation of solar radiation and evaporation over land surfaces.

Heikinheimo, M., Venäläinen, A., Tourula, T., Finnish research program on climate change; second progress report. Edited by M. Kanninen and P. Heikinheimo, Helsinki, Academy of Finland, 1994, p.52-58, 10 refs.

DLC QC981.8.C5F42 1994

Microclimatology, Climatology, Models, Solar radiation, Evaporation, Climatic changes, Aerosols, Insolation, Soil water, Finland

50-3187

Chemical and physical conversion in cold atmosphere and the effect of radiation.

Kulmala, M., et al, Finnish research program on climate change; second progress report. Edited by M. Kanninen and P. Heikinheimo, Helsinki, Academy of Finland, 1994, p.59-64, 10 refs.

DLC QC981.8.C5F42 1994

Cloud droplets, Polar stratospheric clouds, Aerosols, Albedo, Climatic changes, Climatic factors, Ozone

50-3188

Sulfate aerosols and climate change.

Kerminen, V.-M., Hillamo, R., Mäkinen, M., Pakkanen, A.V., Finnish research program on climate change; second progress report. Edited by M. Kanninen and P. Heikinheimo, Helsinki, Academy of Finland, 1994, p.65-70, 15 refs.

DLC QC981.8.C5F42 1994

Aerosols, Climatic changes, Polar atmospheres, Particles, Particle size distribution, Hygroscopicity, Finland

50-3189

Behaviour of stratospheric and upper tropospheric ozone in high latitudes.

Kyrö, E., Rummukainen, M., Taalas, P., Damski, J., Supperi, A., Finnish research program on climate change; second progress report. Edited by M. Kanninen and P. Heikinheimo, Helsinki, Academy of Finland, 1994, p.73-78, 9 refs.

DLC QC981.8.C5F42 1994

Ozone, Stratosphere, Polar atmospheres, Polar stratospheric clouds, Antarctica—Antarctic Peninsula, Antarctica—Marambio Station

There are large interhemispheric differences in the emissions of CO, NOx and hydrocarbons, which are the main precursors of the photochemical production of ozone. The concentrations of those compounds in Antarctica are almost negligible compared with the high concentrations over Europe. It is therefore interesting to compare the tropospheric ozone profiles available from Marambio and a few European arctic stations. The analysis shows that during winter the ozone concentrations are fairly equal in both hemispheres. In spring and summer up to 2-3 times higher tropospheric ozone concentrations are measured at the arctic stations than at Marambio and the arctic concentrations remain high until late autumn. This could be due to the general photochemical activation after the polar night which leads to the ozone production in the arctic troposphere, whereas at Marambio the concentration decreases following the dominance of photochemical sink reactions in the NOx-poor antarctic environment. The arctic lower troposphere is also occasionally directly influenced by European NOx/HC emissions, which lead to a strong ozone maximum in a 1-2 km thick layer during photochemically favorable weather conditions. On the other hand, lower tropospheric ozone minima have been observed during advection of sulphate-rich airmasses from Eastern Europe. No similar tropospheric anomalies have been found in Marambio data. Indications of stratospheric intrusions have been found at both hemispheres. (Auth. mod.)

50-3190

Precision measurements and theoretical calculations for solar ultraviolet radiation.

Jokela, K., Leszczynski, K., Visuri, R., Finnish research program on climate change; second progress report. Edited by M. Kanninen and P. Heikinheimo, Helsinki, Academy of Finland, 1994, p.79-84, 15 refs.

DLC QC981.8.C5F42 1994

Ultraviolet radiation, Solar radiation, Ozone, Polar atmospheres, Radiometry, Snow cover effect, Finland

50-3191

Tropospheric chemistry of greenhouse gases in Finnish conditions.

Laurila, T., Hakola, H., Joffre, S.M., Lättilä, H., Koskinen, T., Finnish research program on climate change; second progress report. Edited by M. Kanninen and P. Heikinheimo, Helsinki, Academy of Finland, 1994, p.85-90, 9 refs.

DLC QC981.8.C5F42 1994

Ozone, Greenhouse effect, Atmospheric composition, Polar atmospheres, Hydrocarbons, Finland

50-3192

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DLC QC981.8.C5F42 1994

Climatic changes, Air pollution, Ecosystems, Runoff, Models, Hydrology, Snowmelt, Soil water, Finland

50-3193

Source areas for storm runoff generation estimated by isotope methods and the TOPMODEL.

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DLC QC981.8.C5F42 1994

Hydrology, Runoff, Models, Isotopes, Soil water, Ground water

50-3194

Estimation of climate change effect on the runoff: catchment-scale application of SOIL-model.

Roos, J., Ahonen, J., Finnish research program on climate change; second progress report. Edited by M. Kanninen and P. Heikinheimo, Helsinki, Academy of Finland, 1994, p.104-108, 3 refs.

DLC QC981.8.C5F42 1994

Climatic changes, Climatic factors, Runoff, Models, Frozen ground, Ground thawing, Simulation, Snowmelt, Finland

50-3195

Climate change and water resources in Vuoksi watershed.

Vehviläinen, B., Huttunen, M., Finnish research program on climate change; second progress report. Edited by M. Kanninen and P. Heikinheimo, Helsinki, Academy of Finland, 1994, p.109-112, 2 refs.

DLC QC981.8.C5F42 1994

Climatic changes, Water reserves, Watersheds, Models, Runoff, Water level, Snowmelt, Evaporation, Finland

50-3196

Effect of climate change on erosion and nutrient transport from arable land.

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DLC QC981.8.C5F42 1994

Climatic changes, Climatic factors, Erosion, Runoff, Simulation, Models, Agriculture, Frozen ground, Finland

50-3197

Framework for modeling the effects of climate change on material fluxes in forested catchments.

Holmberg, M., et al, Finnish research program on climate change; second progress report. Edited by M. Kanninen and P. Heikinheimo, Helsinki, Academy of Finland, 1994, p.118-121, 14 refs.

DLC QC981.8.C5F42 1994

Models, Climatic changes, Climatic factors, Runoff, Simulation, Finland

50-3198

Modeling the effects of climate change on lakes.

Frisk, T., Bilaletdin, Ä., Huttula, T., Saura, M., Peltonen, A., Kallio, K., Finnish research program on climate change; second progress report. Edited by M. Kanninen and P. Heikinheimo, Helsinki, Academy of Finland, 1994, p.122-127, 8 refs.

DLC QC981.8.C5F42 1994

Climatic changes, Climatic factors, Models, Lakes, Lake water, Lake ice, Ecosystems, Ice cover, Water temperature, Ice conditions, Water level, Finland

50-3199

Modeling the effects of climatic change on phosphorus transport from a drainage basin.

Bilaletdin, Ä., Kallio, K., Frisk, T., Vehviläinen, B., Huttunen, M., Roos, J., Finnish research program on climate change; second progress report. Edited by M. Kanninen and P. Heikinheimo, Helsinki, Academy of Finland, 1994, p.128-133, 4 refs.

DLC QC981.8.C5F42 1994

Climatic changes, Climatic factors, Models, Ecosystems, Lakes, Runoff, Soil water, Ground water, Frozen ground, Snowmelt, Finland

50-3200

Application of lake temperature model for predicting the effect of climatic change.

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DLC QC981.8.C5F42 1994

Climatic changes, Climatic factors, Models, Lakes, Water temperature, Lake water, Air temperature, Finland

50-3201

Impact of climate change on carbon cycle in freshwater ecosystems.

Kankaala, P., Ojala, A., Arvola, L., Tulonen, T., Finnish research program on climate change; second progress report. Edited by M. Kanninen and P. Heikinheimo, Helsinki, Academy of Finland, 1994, p.140-145, 7 refs.

DLC QC981.8.C5F42 1994

Ecosystems, Models, Climatic changes, Climatic factors, Carbon dioxide, Plankton, Biomass, Sedimentation, Algae, Littoral zone, Lakes, Finland

50-3202

Development of a Baltic Sea ice climate model.

Leppäranta, M., Haapala, J., Elo, A.-R., Herlevi, A., Finnish research program on climate change; second progress report. Edited by M. Kanninen and P. Heikinheimo, Helsinki, Academy of Finland, 1994, p.165-170, 9 refs.

DLC QC981.8.C5F42 1994

Sea ice, Ice models, Climatology, Ice conditions, Ice cover thickness, Snow depth, Baltic Sea

50-3203

Carbon in boreal coniferous forest soil.

Westman, C.J., et al, Finnish research program on climate change; second progress report. Edited by M. Kanninen and P. Heikinheimo, Helsinki, Academy of Finland, 1994, p.177-186, 17 refs.

DLC QC981.8.C5F42 1994

Forest soils, Podsol, Soil water, Biomass, Carbon dioxide, Organic soils, Frozen ground, Finland

50-3204

Acclimation of tree function and structure to climate change and implications to forest carbon balance.

Hari, P., et al, Finnish research program on climate change; second progress report. Edited by M. Kanninen and P. Heikinheimo, Helsinki, Academy of Finland, 1994, p.187-197, 12 refs.

DLC QC981.8.C5F42 1994

Forest ecosystems, Climatic changes, Climatic factors, Trees (plants), Carbon dioxide, Soil water, Soil chemistry, Plant physiology, Photosynthesis, Finland

50-3205

Physiological and genetical adaptation of forest trees to climatic changes.

Beuker, E., Häggman, J., Koski, V., Finnish research program on climate change; second progress report. Edited by M. Kanninen and P. Heikinheimo, Helsinki, Academy of Finland, 1994, p.198-202, 6 refs.

DLC QC981.8.C5F42 1994

Climatic changes, Climatic factors, Trees (plants), Plant physiology, Frost resistance, Finland

50-3206

Effect of temperature on the phenology of perennial plant species.

Lappalainen, H., Heikinheimo, M., Finnish research program on climate change; second progress report. Edited by M. Kanninen and P. Heikinheimo, Helsinki, Academy of Finland, 1994, p.203-208, 7 refs.

DLC QC981.8.C5F42 1994

Plant physiology, Temperature effects, Plants (botany), Finland

50-3207

Response of the boreal forest ecosystem to climatic change and its silvicultural implications.

Kellomäki, S., ed, Finnish research program on climate change; second progress report. Edited by M. Kanninen and P. Heikinheimo, Helsinki, Academy of Finland, 1994, p.209-210, Refs. p.228-232.

DLC QC981.8.C5F42 1994

Forest ecosystems, Climatic changes, Climatic factors, Finland

50-3208

Effects of climatic change on onset of growth and risk of frost damage in Scots pine.

Hänninen, H., Finnish research program on climate change; second progress report. Edited by M. Kanninen and P. Heikinheimo, Helsinki, Academy of Finland, 1994, p.210-212.

DLC QC981.8.C5F42 1994

Climatic changes, Climatic factors, Trees (plants), Frost resistance, Plant physiology, Finland

50-3209

Response of boreal forest ecosystems to climatic change and its silvicultural implications: modelling.

Kellomäki, S., Väisänen, H., Strandman, H., Finnish research program on climate change; second progress report. Edited by M. Kanninen and P. Heikinheimo, Helsinki, Academy of Finland, 1994, p.215-218.

DLC QC981.8.C5F42 1994

Forest ecosystems, Climatic changes, Climatic factors, Models, Simulation, Plant physiology, Trees (plants), Photosynthesis, Finland

50-3210

Effect of climatic change on photosynthesis, respiration and transpiration of Scots pine.

Laitinen, K., Finnish research program on climate change; second progress report. Edited by M. Kanninen and P. Heikinheimo, Helsinki, Academy of Finland, 1994, p.218-221.

DLC QC981.8.C5F42 1994

Trees (plants), Photosynthesis, Plant physiology, Climatic changes, Climatic factors, Carbon dioxide, Finland

50-3211

Soil respiration in a stand of Scots pine under elevated temperature and atmospheric carbon on a poor upland site.

Pajari, B., Finnish research program on climate change; second progress report. Edited by M. Kanninen and P. Heikinheimo, Helsinki, Academy of Finland, 1994, p.221-223.

DLC QC981.8.C5F42 1994

Carbon dioxide, Trees (plants), Soil temperature, Frozen ground temperature, Finland

50-3212

Modelling mechanism of wind-induced damage of Scots pine.

Peltola, H., Finnish research program on climate change; second progress report. Edited by M. Kanninen and P. Heikinheimo, Helsinki, Academy of Finland, 1994, p.224-225.

DLC QC981.8.C5F42 1994

Forest ecosystems, Trees (plants), Wind factors, Wind velocity

50-3213

Effects of long-term elevation in air temperature and CO2 concentration on frost hardiness of Scots pine.

Repo, T., Finnish research program on climate change; second progress report. Edited by M. Kanninen and P. Heikinheimo, Helsinki, Academy of Finland, 1994, p.225-228.

DLC QC981.8.C5F42 1994

Frost resistance, Trees (plants), Air temperature, Temperature effects, Carbon dioxide

50-3214

Effects of elevated N-input and CO2 on *Sphagna* with different trophic level.

Jauhiainen, J., Vasander, H., Finnish research program on climate change; second progress report. Edited by M. Kanninen and P. Heikinheimo, Helsinki, Academy of Finland, 1994, p.251-256, 6 refs.

DLC QC981.8.C5F42 1994

Mosses, Carbon dioxide, Photosynthesis, Climatic changes, Climatic factors, Plant physiology, Finland

50-3215

Biomass and production of vascular plants in a mesotrophic fen.

Saarinen, T., Tolonen, K., Vasander, H., Finnish research program on climate change; second progress report. Edited by M. Kanninen and P. Heikinheimo, Helsinki, Academy of Finland, 1994, p.257-261, 8 refs.

DLC QC981.8.C5F42 1994

Plant physiology, Biomass, Peat, Swamps, Roots, Finland

50-3216

Role of above-ground biomass in carbon cycling in drained peatland ecosystems.

Laiho, R., Laine, J., Finnish research program on climate change; second progress report. Edited by M. Kanninen and P. Heikinheimo, Helsinki, Academy of Finland, 1994, p.262-266, 3 refs.

DLC QC981.8.C5F42 1994

Biomass, Ecosystems, Swamps, Peat, Trees (plants), Litter, Roots, Finland

50-3217

Fine root production and decomposition on drained peatlands.

Finér, L., Laine, J., Finnish research program on climate change; second progress report. Edited by M. Kanninen and P. Heikinheimo, Helsinki, Academy of Finland, 1994, p.267-272, 10 refs.

DLC QC981.8.C5F42 1994

Roots, Biomass, Plant physiology, Peat, Swamps, Litter, Forest ecosystems, Trees (plants), Decomposition, Finland

50-3218

CO_2 fluxes in peatlands under varying temperature and moisture conditions.

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DLC QC981.8.C5F42 1994

Carbon dioxide, Swamps, Temperature variations, Ecosystems, Soil water, Soil temperature, Frozen ground temperature, Finland

50-3219

Temporal and spatial variation of CO_2, CH_4 and N_2O fluxes in a boreal minerotrophic pine fen.

Silvola, J., Alm, J., Martikainen, P., Nykänen, H., Finnish research program on climate change; second progress report. Edited by M. Kanninen and P. Heikinheimo, Helsinki, Academy of Finland, 1994, p.277-278.

DLC QC981.8.C5F42 1994

Carbon dioxide, Temperature variations, Temperature effects, Soil temperature, Air temperature, Finland

50-3220

Emissions of methane and nitrogen oxides from peatland ecosystems.

Martikainen, P.J., Nykänen, H., Lång, K., Alm, J., Silvola, J., Finnish research program on climate change; second progress report. Edited by M. Kanninen and P. Heikinheimo, Helsinki, Academy of Finland, 1994, p.279-284, 11 refs.

DLC QC981.8.C5F42 1994

Ecosystems, Swamps, Peat, Natural gas, Soil temperature, Water table, Finland

50-3221

Leaching of organic carbon and nitrogen from forested catchments.

Kortelainen, P., Saukkonen, S., Finnish research program on climate change; second progress report. Edited by M. Kanninen and P. Heikinheimo, Helsinki, Academy of Finland, 1994, p.285-290, 13 refs.

DLC QC981.8.C5F42 1994

Watersheds, Forest ecosystems, Swamps, Peat, Runoff, Water chemistry, Leaching, Hydrology, Finland

50-3222

Response of leaching from mire ecosystems to changing climate.

Sallantaus, T., Finnish research program on climate change; second progress report. Edited by M. Kanninen and P. Heikinheimo, Helsinki, Academy of Finland, 1994, p.291-296, 4 refs.

DLC QC981.8.C5F42 1994

Climatic changes, Climatic factors, Leaching, Swamps, Peat, Ecosystems, Runoff, Ground water, Watersheds, Water chemistry, Finland

50-3223

Rate of carbon accumulation in boreal mires.

Tolonen, K., Turunen, J., Vasander, H., Jungner, H., Finnish research program on climate change; second progress report. Edited by M. Kanninen and P. Heikinheimo, Helsinki, Academy of Finland, 1994, p.297-302, 18 refs.

DLC QC981.8.C5F42 1994

Peat, Swamps, Radioactive age determination, Models, Global warming, Estonia, Finland, United States—Maine

50-3224

Effect of forest drainage on the carbon balance of peatland ecosystems.

Laine, J., Minkkinen, K., Puhalainen, A., Jauhiainen, S., Finnish research program on climate change; second progress report. Edited by M. Kanninen and P. Heikinheimo, Helsinki, Academy of Finland, 1994, p.303-308, 11 refs.

DLC QC981.8.C5F42 1994

Swamps, Peat, Ecosystems, Biomass, Forest land, Trees (plants), Finland

50-3225

Effect of drainage intensity and fertilization on peat carbon compounds and their mineralization.

Karsisto, M., Kitunen, V., Finnish research program on climate change; second progress report. Edited by M. Kanninen and P. Heikinheimo, Helsinki, Academy of Finland, 1994, p.309-314, 2 refs.

DLC QC981.8.C5F42 1994

Peat, Biomass, Swamps, Soil microbiology, Plant physiology, Finland

50-3226

Differences in carbon accumulation of two cut-over peatlands in Finland.

Roderfeld, H., Vasander, H., Tolonen, K., Finnish research program on climate change; second progress report. Edited by M. Kanninen and P. Heikinheimo, Helsinki, Academy of Finland, 1994, p.315-320, 9 refs.

DLC QC981.8.C5F42 1994

Peat, Swamps, Ecology, Ecosystems, Water table, Water level, Site surveys, Plants (botany), Finland

50-3227

Development of a climate generator for Finland. II.

Posch, M., Finnish research program on climate change; second progress report. Edited by M. Kanninen and P. Heikinheimo, Helsinki, Academy of Finland, 1994, p.323-328, 5 refs.

DLC QC981.8.C5F42 1994

Climatology, Models, Data processing, Weather forecasting, Air temperature, Precipitation (meteorology), Finland

50-3228

Estimation of biomass and other characteristics of boreal forest over extensive areas using NOAA AVHRR data.

Häme, T., Salli, A., Lohi, A., Andersson, K., Rauste, Y., Finnish research program on climate change; second progress report. Edited by M. Kanninen and P. Heikinheimo, Helsinki, Academy of Finland, 1994, p.329-334, 7 refs.

DLC QC981.8.C5F42 1994

Biomass, Forest land, Remote sensing, LANDSAT, Mathematical models, Trees (plants), Imaging, Finland, Sweden, Russia—Ural Mountains

50-3229

Forest damage mapping with multitemporal ERS-1 SAR data.

Rauste, Y., Finnish research program on climate change; second progress report. Edited by M. Kanninen and P. Heikinheimo, Helsinki, Academy of Finland, 1994, p.335-339, 4 refs.

DLC QC981.8.C5F42 1994

Remote sensing, Mapping, Forest land, Trees (plants), Synthetic aperture radar, Snow cover effect, Backscattering, Damage, Finland

50-3230

Geographic information system for SILMU and the modelling of soil carbon flows.

Alm, J., Lempinen, R., Finnish research program on climate change; second progress report. Edited by M. Kanninen and P. Heikinheimo, Helsinki, Academy of Finland, 1994, p.340-345, 8 refs.

DLC QC981.8.C5F42 1994

Data processing, Computer applications, Models, Ecosystems, Peat, Biomass, Roots, Atmospheric composition, Soil mapping

50-3231

Northern forest plants under the pressure of environmental changes.

Laine, K., et al, Finnish research program on climate change; second progress report. Edited by M. Kanninen and P. Heikinheimo, Helsinki, Academy of Finland, 1994, p.349-361, 24 refs.

DLC QC981.8.C5F42 1994

Climatic changes, Climatic factors, Environmental impact, Forest ecosystems, Forest land, Trees (plants), Lichens, Plants (botany), Air pollution, Carbon dioxide, Snow cover effect, Biomass, Forest soils, Finland

50-3232

Physiological responses of *Pinus sylvestris* on changing carbon dioxide and ozone concentration.

Holopainen, T., et al, Finnish research program on climate change; second progress report. Edited by M. Kanninen and P. Heikinheimo, Helsinki, Academy of Finland, 1994, p.362-365, 15 refs.

DLC QC981.8.C5F42 1994

Trees (plants), Plant physiology, Carbon dioxide, Ozone, Air pollution, Climatic factors, Climatic changes, Environmental impact, Finland

50-3233

Climate change and forest management alternatives.

Valsta, L., Linkosalo, T., Finnish research program on climate change; second progress report. Edited by M. Kanninen and P. Heikinheimo, Helsinki, Academy of Finland, 1994, p.369-374, 11 refs.

DLC QC981.8.C5F42 1994

Climatic changes, Climatic factors, Forestry, Simulation, Models, Temperature variations, Finland

50-3234

Assessment of the impact of the greenhouse gas emission and sink scenarios in Finland on radiative forcing and greenhouse effect.

Pipatti, R., Savolainen, I., Sinisalo, J., Finnish research program on climate change; second progress report. Edited by M. Kanninen and P. Heikinheimo, Helsinki, Academy of Finland, 1994, p.375-380, 12 refs.

DLC QC981.8.C5F42 1994

Greenhouse effect, Carbon dioxide, Forest ecosystems, Models, Environmental impact, Finland

50-3235

Economic and game-theoretical analysis of CO_2 reduction agreements.

Tahvonen, O., Finnish research program on climate change; second progress report. Edited by M. Kanninen and P. Heikinheimo, Helsinki, Academy of Finland, 1994, p.387-392, 17 refs.

DLC QC981.8.C5F42 1994

Carbon dioxide, Economic analysis, Analysis (mathematics), Natural resources, Forestry, Finland

50-3236

Revolution in arctic navigation. [Revoliutsiia v arkticheskom sudokhodstve]

Ternovoĭ, E., *Morskoĭ flot,* July-Aug. 1995, No.7-8, p.31-33, In Russian.

Ice navigation, Ships, Icebreakers, Marine transportation

50-3237

Icebreaker "Ermak". [Ledokol "Ermak"]

Basevich, V., Antonov-Ovseenko, A., *Morskoĭ flot,* Sep.-Oct. 1994, No.9-10, p.38-40, In Russian.

Icebreakers, Ships, History, Ice navigation

50-3238

NRC centre for ice loads on Beaufort Sea structures.

Timco, G.W., *National Research Council Canada. Canadian Hydraulics Centre. Technical report,* Jan. 1996, HYD-TR-006, 20p., 12 refs. + listing of current holdings in Appendix E. For previous report see 49-4462.

Ice solid interface, Ice loads, Ice pressure, Ice cover strength, Ice surveys, Artificial islands, Offshore structures, Bibliographies, Data processing, Beaufort Sea

50-3239

Antarctic commute: CRREL searches for safe land route to South Pole.

Chalmers, P., MP 3777, *Engineer update,* Feb. 1996, 20(2), p.6-7.

Logistics, Route surveys, Crevasse detection, Traverses, Stations, Cold weather construction, Antarctica—Amundsen-Scott Station

As part of the U.S. National Science Foundation's (NSF) South Pole Redevelopment Project (SPRP), the U.S. Army Cold Regions Research and Engineering Laboratory (CRREL) is seeking a feasible overland route from McMurdo Station to Amundsen-Scott Station at the South Pole, 700 air miles away. The proposed new station will be of modular design on stilts to permit snow to blow beneath it instead of drifting. By the current air route at a cost of $2/lb, the estimated 17 million pounds of cargo required for the rebuilding would cost at least $34 million. It is estimated that an overland route could carry two and a half times the cargo at half the cost. The first part of the route must cross the Transantarctic Mountains. Glaciers mark the passes but are subject to severe crevasse hazards. A helicopter-borne pulsed radar with its operating frequency boosted from the normal 80-100 MHz to 500 MHz has been tested for crevasse detection. Flown at 30 knots and 20 feet above the surface, it can scan a 15-meter-wide swath of snow and ice to a depth of 20 meters.

50-3240

Snowslides in Alta area. Part 1.

Shank, H.M., *Avalanche review,* Jan. 1996, 14(3), p.1,7,8, Reprint of a memo to the Regional Forester, Ogden, UT, Feb. 21, 1945.

Avalanches, Accidents, Snow cover stability, Avalanche formation, Avalanche forecasting, United States—Utah

50-3241

Multilingual ice terminology. Addendum I.

International Association for Hydraulic Research. Section on Ice Problems, Budapest, Hungary, Research Centre for Water Resources, 1980, 24p., With Chinese, Esperanto, Finnish, Japanese, Polish, Romanian, and Turkish equivalents and indexes. For the original to which this is an addendum, see 35-489.

Ice, Terminology, Dictionaries

50-3242

Techniques and equipment for measurement of snowcover, including stratigraphy.

Adams, W.P., Barr, D.R., *Trent University, Peterborough, Ontario. Department of Geography. Occasional paper,* 1974, No.3, Measurement in physical geography: laboratory and field equipment built at Trent University, p.11-26, 10 refs.

Snow surveys, Snow courses, Snow survey tools, Snow samplers, Snow stratigraphy

50-3243

United States arctic research plan: Biennial revision: 1996-2000.

Meyers, C.E., Haugh, J., Cate, D.W., MP 3778, *Arctic research of the United States,* Spring 1995, Vol.9, 68p.

Research projects, Oceanography, Meteorology, Climatology, Natural resources, Environmental protection, Ecosystems, International cooperation, Cost analysis

50-3244

Effects of fire in the taiga on the environment.

Lotspeich, F.B., Mueller, E.W., MP 3779, Symposium on Fire in the Northern Environment, Fairbanks, AK, Apr. 13-14, 1971. Proceedings. Edited by C.W. Slaughter et al, Portland, U.S. Department of Agriculture, 1971, p.45-50.

Forest fires, Countermeasures, Solutions, Geochemistry, Taiga, Ecosystems, Water pollution, Environmental protection, Environmental impact, Permafrost preservation

50-3245

Catline rehabilitation and restoration.

Bolstad, R., MP 3780, Symposium on Fire in the Northern Environment, Fairbanks, AK, Apr. 13-14, 1971. Proceedings. Edited by C.W. Slaughter et al, Portland, U.S. Department of Agriculture, 1971, p.107-116.

Forest fires, Environmental impact, Soil erosion, Soil stabilization, Land reclamation, Permafrost preservation, Earthwork, Dams, Environmental protection

50-3246

Snow and ice cover and climate sensitivity.

Oerlemans, J., Bintanja, R., NATO Advanced Study Institute, Il Ciocco, Lucca, Italy, May 27-June 6, 1994. Proceedings. Role of water and the hydrological cycle in global change. Edited by H.R. Oliver et al and NATO Advanced Science Institutes, Series I. Global environmental change. Vol.31, Berlin, Springer-Verlag, 1995, p.189-198, 12 refs.

DLC QC981.8 C5 R68

Climatology, Global change, Air temperature, Temperature variations, Heat balance, Radiation balance, Ice air interface, Ice cover effect, Snow cover effect, Albedo, Simulation, Mathematical models

50-3247

Historical records of fatty acids in an ice core from Site-J, Greenland.

Kawamura, K., Suzuki, I., Fujii, Y., Watanabe, O., NIPR Symposium on Polar Meteorology and Glaciology, Proceedings. No.9, Tokyo, National Institute of Polar Research, 1995, p.1-11, 31 refs.

Climatology, Climatic changes, Ice sheets, Ice cores, Chemical composition, Atmospheric circulation, Aerosols, Organic nuclei, Sedimentation, Sampling, Periodic variations, Greenland

50-3248

Bubble formation experiments in snow densification.

Ishii, S., Narita, H., Maeno, N., NIPR Symposium on Polar Meteorology and Glaciology, Proceedings. No.9, Tokyo, National Institute of Polar Research, 1995, p.23-32, 8 refs.

Snow physics, Ice cores, Snow compression, Snow density, Density (mass/volume), Bubbles, Porosity, Ice vapor interface, High pressure tests, Stress concentration

50-3249

Hydrological observations in Bregger glacier basin, Spitsbergen—discharge, temperature and electric conductivity.

Kodama, Y., Takeuchi, Y., Nakabayashi, H., Watanabe, O., NIPR Symposium on Polar Meteorology and Glaciology, Proceedings. No.9, Tokyo, National Institute of Polar Research, 1995, p.45-53, 9 refs.

Glacial hydrology, Glacier melting, Meltwater, Runoff, River flow, Electrical resistivity, Hydrography, Sampling, Chemical composition, Solubility, Diurnal variations, Norway—Spitsbergen

50-3250

Characteristics of evaporation from snow and tundra surface in Spitsbergen in the snowmelt season.

Takeuchi, Y., Kodama, Y., Nakabayashi, H., NIPR Symposium on Polar Meteorology and Glaciology, Proceedings. No.9, Tokyo, National Institute of Polar Research, 1995, p.54-65, 9 refs.

Microclimatology, Tundra soils, Tundra climate, Snow hydrology, Snow evaporation, Snowmelt, Snow cover effect, Meteorological factors, Heat flux, Snow air interface, Surface temperature, Norway—Spitsbergen

50-3251

Concentration changes of MSA and major ions in arctic aerosols during polar sunrise.

Suzuki, K., Kawamura, K., Kasukabe, H., Yanase, A., Barrie, L.A., NIPR Symposium on Polar Meteorology and Glaciology, Proceedings. No.9, Tokyo, National Institute of Polar Research, 1995, p.160-168, 17 refs.

Polar atmospheres, Atmospheric density, Aerosols, Sampling, Chemical composition, Ion density (concentration), Seasonal variations, Classifications

50-3252

Petroleum in glacially-related sandstones of Gondwana: a review.

Potter, P.E., Franca, A.B., Spencer, C.W., Caputo, M.V., *Journal of petroleum geology,* Oct. 1995, 18(4), p.397-420, Refs. p.417-420.

Glacial geology, Glacial deposits, Hydrocarbons, Lithology, Geologic structures, Outwash, Petroleum industry, Exploration

The supercontinent of Gondwana covered more than six times the combined area of the United States and Brazil. In this paper, the petroleum occurrences and potential of glacially-related rocks of Carboniferous-Permian age in this vast area are reviewed in terms of basin types, reservoirs, seals, traps and source rocks. This review indicates that petroleum production in Gondwana's glaciogenic deposits mostly occurs in cratonic and passive margin basins; it occurs wholly in sandstone reservoirs, chiefly in structural traps, and nearly everywhere, reservoirs are sourced by hydrocarbons from non-glaciogenic shales (either older or younger). The only "glacially unique" features of petroleum in Gondwana deposits are its seals of diamictites, which must also be true when one considers the petroleum possibilities of older ancient glacial and glacially-influenced deposits. (Auth. mod.)

50-3253

Coupled vertical and horizontal galloping—discussion.

Havard, D.G., Turan, Ö.F., Jones, K.F., MP 3781, *Journal of engineering mechanics,* Mar. 1993, 119(3), p.640-641, 4 refs. For pertinent paper see 46-3072.

Power line icing, Transmission lines, Stability, Wind factors, Ice accretion, Ice cover effect, Oscillations, Dynamic properties

50-3254

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Glacial geology, Glacial deposits, Clay soils, Hydrogeology, Lithology, Cracking (fracturing), Fracture zones, Sampling, Permeability, Ground water, Water flow

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Aircraft icing, Chemical ice prevention, Antifreezes, Solutions, Viscosity, Films, Precipitation (meteorology), Supercooling, Air flow, Simulation, Temperature effects, Fluid dynamics, Wind tunnels

50-3256

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Synoptic meteorology, Clouds (meteorology), Cloud physics, Atmospheric circulation, Wind direction, Optical properties, Radio echo soundings, Atmospheric boundary layer, Ice crystal optics, Water content, Thermodynamics, Analysis (mathematics)

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Cloud physics, Optical properties, Remote sensing, Radiometry, Lidar, Radar echoes, Profiles, Ice crystal size, Ice crystal optics, Particle size distribution

50-3258

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Snowfall, Snowstorms, Cloud physics, Weather forecasting, Airports, Computerized simulation, United States—Colorado

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Aircraft icing, Ice forecasting, Ice storms, Weather forecasting, Cloud physics, Airports

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Runways, Road icing, Ice forecasting, Weather forecasting, Computerized simulation

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Soil surveys, Soil erosion, Soil conservation, Desert soils, Eolian soils, Cryogenic soils, Steppes, Frost weathering, Spaceborne photography, China—Inner Mongolia

50-3270
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DLC QK756.B56 1995
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50-3274
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50-3275
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50-3276
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Ice nuclei, Organic nuclei, Nucleating agents, Fungi, Lichens, Plant physiology, Plant tissues, Cryobiology

50-3279
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50-3286
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50-3294
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50-3296
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Wetlands, Ecosystems, Classifications, Landscape types, Plant ecology, Vegetation patterns, Hydrology, United States—Michigan

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Pleistocene, Glacial geology, Glaciation, Mountain glaciers, Quaternary deposits, Lacustrine deposits, Stratigraphy, Paleoecology, Radioactive age determination, Glacier oscillation, Geochronology, United States—Montana

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Climatology, Air temperature, Surface temperature, Diurnal variations, Snow cover distribution, Atmospheric boundary layer, Computer programs, Weather forecasting, Computerized simulation

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50-3302
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Paleoclimatology, Climatic changes, Surface temperature, Atmospheric circulation, Simulation, Models, Accuracy, Correlation, Periodic variations

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Forest tundra, Forest ecosystems, Paleoecology, Paleoclimatology, Climatic changes, Subarctic landscapes, Tundra soils, Eolian soils, Fires, Environmental impact, Soil erosion, Soil analysis, Radioactive age determination, Geochronology, Canada—Quebec—Hudson Bay

50-3305
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Paleoclimatology, Climatic changes, Paleoecology, Limnology, Sedimentation, Lacustrine deposits, Stratigraphy, Fossils, Vegetation patterns, Palynology, Radioactive age determination, Biogeography, Norway—Spitsbergen

50-3306
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Paleoclimatology, Climatic changes, Glacier oscillation, Glacial deposits, Glacial geology, Moraines, Stratigraphy, Sampling, Radioactive age determination, Geochronology, Norway

50-3307

Glacial limits, climate and uplift in the Mount Meylixueshan area of Yunnan Province, China: a simulation modelling approach.

Aniya, M., Yokoyama, K., *Holocene,* 1991, 1(3), p.273-280, 22 refs.

Glacial geology, Pleistocene, Glaciation, Glacier mass balance, Landforms, Moraines, Altitude, Tectonics, Simulation, China—Yunnan Province

50-3308

Calibration of time domain reflectometry for measurement of liquid water in frozen soils.

Seyfried, M.S., Murdock, M.D., *Soil science,* Feb. 1996, 161(2), p.87-98, 62 refs.

Frozen ground physics, Unfrozen water content, Soil water, Soil tests, Soil freezing, Ice water interface, Dielectric properties, Temperature effects, Analysis (mathematics), Simulation

50-3309

Effects of season and four tree species on soluble carbon content in fresh and decomposing litter of temperate forests.

Harris, M.M., Safford, L.O., *Soil science,* Feb. 1996, 161(2), p.130-135, 28 refs.

Forest soils, Sampling, Forest ecosystems, Soil chemistry, Organic soils, Seepage, Solubility, Trees (plants), Plant tissues, Decomposition, Freeze thaw cycles, Freeze thaw tests, Nutrient cycle

50-3310

Mechanical behavior of frozen earth materials under high pressure triaxial test conditions.

Chamberlain, E.J., Groves, C., Perham, R., MP 3782, U.S. Army Cold Regions Research and Engineering Laboratory. Technical report, Hanover, Mar. 1970, 24p. + appends., 9 refs. For another version see 27-1428.

Frozen ground mechanics, Frozen ground compression, Permafrost physics, Soil tests, Strain tests, High pressure tests, Unfrozen water content, Soil compaction, Porosity, Phase transformations, Compressive properties

The purpose of this study was to determine the mechanical properties of frozen earth material under high overburden pressures. Specifically of interest were Poisson's ratio and the shear modulus. The results are to be used to aid in the analysis of disturbances originating at depth in areas of deep continuous permafrost. Triaxial compression tests to 40 ksi confining pressure were performed at -10°C on two different types of frozen earth materials: ice-saturated, fine-grained, poorly-graded sand and ice-saturated well-graded silt. The materials were selected to represent wide variations in natural conditions. They were prepared and reconstituted in the laboratory to form nearly homogeneous test samples.

50-3311

Sound propagation through hydrological fronts in the Barents Sea.

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Oceanography, Underwater acoustics, Sound transmission, Wave propagation, Water structure, Interfaces, Hydrology, Water temperature, Barents Sea

50-3312

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LANDSAT, Snow surveys, Sensor mapping, Radiometry, Snow cover distribution, Snow optics, Reflectivity, Classifications, Spaceborne photography, Image processing, Data processing, Resolution

50-3313

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Exploration, Geological surveys, Ocean bottom, Bottom sediment, Soil structure, Classifications, Temperature measurement, Drill core analysis, Subsea permafrost, Geochemistry, Beaufort Sea

50-3314

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Climatology, Global warming, Snow depth, Snowmelt, Snow cover distribution, Seasonal variations, Snow surveys, Sensor mapping, Remote sensing, Radiometry, Brightness, Snow water equivalent

50-3315

Geological and geophysical exploration of alpine and peri-alpine glacial valleys.

Pugin, A., Wildi, W., *Eclogae geologicae Helvetiae,* 1995, 88(1), p.183-197, With French summary. 27 refs.

Glacial geology, Valleys, Glacial deposits, Quaternary deposits, Alpine landscapes, Bedrock, Soil profiles, Seismic reflection, Topographic features, Topographic surveys, Subsurface investigations, Switzerland

50-3317

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Gburčik, P., Stanojević, S., Gburčik, V., *Belgrade. University. Faculty of Agriculture. Review of research work,* Apr. 1993, 38(1), p.87-92, With Crotian summary. 6 refs.

Hail, Hail prevention, Climatic changes, Climate, Serbia

50-3318

Test for time series homogeneity of hail-event data in Serbia.

Gburčik, P., Stanojević, S., Gburčik, V., *Belgrade. University. Faculty of Agriculture. Review of research work,* Feb. 1994, 39(1), p.145-150, With Crotian summary. 6 refs.

Hail, Hail prevention, Climatic changes, Global change, Statistical analysis, Climatic factors, Serbia

50-3319

Petroleum resources of the Mackenzie Delta and Beaufort Sea.

Dixon, J., et al, *Geological Survey of Canada. Bulletin,* 1994, No.474, 52p., In English and French. 28 refs.

DLC QE185.A43

Natural resources, Economic development, Hydrocarbons, Natural gas, Petroleum industry, Exploration, Geological surveys, Geologic structures, Offshore drilling, Marine geology, Stratigraphy, Beaufort Sea, Canada—Northwest Territories—Mackenzie Delta

50-3320

Effect of microclimate on road superstructures. Final report. [Effect du micro-climat sur les superstructures routières. Rapport final]

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Pavements, Road icing, Microclimatology, Freezing indexes, Insolation, Thermal radiation, Surface energy, Radiation absorption, Ice solid interface, Surface temperature, Statistical analysis

50-3321

Forest expansion and climate change in the mountain hemlock (*Tsuga mertensiana*) zone, Lassen Volcanic National Park, California, U.S.A.

Taylor, A.H., *Arctic and alpine research,* Aug. 1995, 27(3), p.207-216, 52 refs.

Forest ecosystems, Trees (plants), Alpine landscapes, Microclimatology, Climatic changes, Global warming, Forest lines, Revegetation, Vegetation patterns, Snow cover effect, Biogeography, Periodic variations, Correlation, United States—California—Lassen Volcanic National Park

50-3322

Climate, geography, and tree establishment in subalpine meadows of the Olympic Mountains, Washington, U.S.A.

Woodward, A., Schreiner, E.G., Silsbee, D.G., *Arctic and alpine research,* Aug. 1995, 27(3), p.217-225, 34 refs.

Forest ecosystems, Plant ecology, Trees (plants), Vegetation patterns, Revegetation, Alpine landscapes, Climatic changes, Periodic variations, Correlation, Global warming, United States—Washington—Olympic Mountains

50-3323

Relations between atmospheric circulation and mass balance of South Cascade Glacier, Washington, U.S.A.

McCabe, G.J., Jr., Fountain, A.G., *Arctic and alpine research,* Aug. 1995, 27(3), p.226-233, 43 refs.

Glacier mass balance, Glacier ablation, Ice air interface, Atmospheric circulation, Precipitation (meteorology), Subsidence, Climatic changes, Moisture transfer, Periodic variations, Correlation, United States—Washington—North Cascade Mountains

50-3324

Glacier fluctuations in the Kenai Fjords, Alaska, U.S.A.: an evaluation of controls on iceberg-calving glaciers.

Wiles, G.C., Calkin, P.E., Post, A., *Arctic and alpine research,* Aug. 1995, 27(3), p.234-245, 41 refs.

Glacier mass balance, Glacier oscillation, Climatic changes, Calving, Ice water interface, Icebergs, Estuaries, Radioactive age determination, Geochronology, Periodic variations, Correlation, United States—Alaska—Kenai Fjords National Park

50-3325

Vegetation chronosequence near Exit Glacier, Kenai Fjords National Park, Alaska, U.S.A.

Helm, D.J., Allen, E.B., *Arctic and alpine research,* Aug. 1995, 27(3), p.246-257, 42 refs.

Plant ecology, Ecosystems, Subarctic landscapes, Glacier ablation, Moraines, Outwash, Floodplains, Vegetation patterns, Revegetation, United States—Alaska—Kenai Fjords National Park

50-3326

Distributions of Chironomidae (Insecta: Diptera) and other freshwater midges with respect to treeline, Northwest Territories, Canada.

Walker, I.R., MacDonald, G.M., *Arctic and alpine research,* Aug. 1995, 27(3), p.258-263, 34 refs.

Paleoclimatology, Paleoecology, Arctic landscapes, Limnology, Tundra vegetation, Climatic changes, Vegetation patterns, Forest lines, Suspended sediments, Sampling, Biomass, Correlation, Canada—Northwest Territories

50-3327

Ice divides and drainage basins on the ice caps of Franz Josef Land, Russian high arctic, defined from Landsat, KFA-1000, and ERS-1 SAR satellite imagery.

Dowdeswell, J.A., Glazovskiĭ, A.F., Macheret, IU.IA., *Arctic and alpine research,* Aug. 1995, 27(3), p.264-270, 17 refs.

Arctic landscapes, Spaceborne photography, LANDSAT, Radiometry, Synthetic aperture radar, Ice sheets, Glacier surfaces, Surface structure, Sensor mapping, Geophysical surveys, Surface drainage, Nunataks, Topographic features, Russia—Franz Josef Land

50-3328

Pronival ("protalus") ramparts in the Romsdalsalpane, southern Norway: forms, terms, subnival processes, and alternative mechanisms of formation.

Shakesby, R.A., Matthews, J.A., McCarroll, D., *Arctic and alpine research,* Aug. 1995, 27(3), p.271-282, 49 refs.

Periglacial processes, Subarctic landscapes, Geomorphology, Talus, Landforms, Nivation, Snow cover effect, Sedimentation, Sediment transport, Slope processes, Solifluction, Terminology, Norway

50-3329

Shoreward movement of grounded lake ice and sediment transport: an application of a two-dimensional elastic model.
Sasaki, T., Nagasawa, T., *Arctic and alpine research,* Aug. 1995, 27(3), p.283-289, 18 refs.
Lake ice, Ice mechanics, Ice cracks, Grounded ice, Ice push, Thermal expansion, Bottom sediment, Ice solid interface, Sediment transport, Profiles, Mathematical models, Ice elasticity, Shoreline modification

50-3330

Growth curves for calcium-tolerant lichens in the Canadian Rocky Mountains.
McCarthy, D.P., Smith, D.J., *Arctic and alpine research,* Aug. 1995, 27(3), p.290-297, 43 refs.
Glacial geology, Moraines, Sampling, Geochronology, Lichens, Growth, Periodic variations, Age determination, Alpine landscapes, Geobotanical interpretation, Canada—Alberta

50-3331

International Conference on Global Change and Arctic Terrestrial Ecosystems—recommendations.
Arctic Global Change Conference, Oppdal, Norway, Aug. 21-26, 1993, Oechel, W.C., ed, Holten, J.I., ed, Aug. 1993, 53p.
Meetings, Ecosystems, Biomass, Climatology, Climatic changes, Global change, Environmental impact, Environmental protection, Research projects, Nutrient cycle, Meteorological factors

50-3332

U.S. FROST: Data and Science Plan. Report from the U.S. Science FROST Workshop, 2 and 3 August 1993.
Bromwich, D.H., ed, Shawn, R., ed, Byrd Polar Research Center. Report No.7, Columbus, 1993, 40p., 30 refs.
Polar atmospheres, Remote sensing, Atmospheric circulation, Atmospheric boundary layer, Climatology, Air temperature, Climatic changes, Sounding, Spaceborne photography, Weather forecasting, Mathematical models
The First Regional Observing Study of the Troposphere (FROST) is an intensive data collection and analysis program designed to investigate the performance of forecast models poleward of 50°S latitude during three one-month periods: July, 1994; Oct. 15 to Nov. 14, 1994; and Jan., 1995. The United States scientific community plans active involvement in all phases of FROST starting with a vigorous effort to compile a comprehensive set of atmospheric data and analyses for the FROST study area. The data will be collected at the University of Wisconsin's Antarctic Meteorological Research Center for dissemination to the international FROST data and analysis centers. The U.S. scientific community will also play a key role in analyzing the FROST data and determining the data's impact on current forecast models. The data and scientific plans for the U.S. participation in FROST are outlined in this report. (Auth.)

50-3333

Mathematical model to correlate frost heave of pavements with laboratory predictions. Final report.
Berg, R.L., Guymon, G.L., Johnson, T.C., MP 3783, U.S. Army Cold Regions Research and Engineering Laboratory, Hanover, Apr. 1979, 120p., Refs. p.79-85. For another version see 34-3200.
Pavements, Deformation, Frost heave, Frost action, Phase transformations, Soil water migration, Subgrades, Pavement bases, Frozen ground mechanics, Frost penetration, Mathematical models, Design criteria
A mathematical model of coupled heat and moisture flow in soils has been developed. The model includes algorithms for phase change of soil moisture and frost heave, and several types of boundary and initial conditions are permitted. The finite element method of weighted residuals (Galerkin procedure) was chosen to simulate the spatial regime and the Crank-Nicolson method was used for the time domain portion of the model. To facilitate evaluation of the model, the heat and moisture fluxes were essentially "decoupled"; moisture flux was then simulated accurately, as were heat flux and frost penetration. The coupled model was used to simulate frost penetration and frost heave in a laboratory test. Comparison of the simulated and experimental data illustrates the importance of unsaturated hydraulic conductivity. It is one parameter which is difficult to measure and for which only a few laboratory test results are available. Therefore, unsaturated hydraulic conductivities calculated in the computer model may be a significant source of error in calculations of frost heave. The algorithm incorporating effects of surcharge and overburden was inconclusively evaluated. Time-dependent frost penetration and frost heave in laboratory specimens were closely simulated with the model.

50-3334

Taxonomic notes on recent benthic Foraminifera from Nansen Basin, Arctic Ocean. [Zur Taxonomie von rezenten benthischen Foraminiferen aus dem Nansen Becken, Arktischer Ozean]
Wollenburg, J., *Berichte zur Polarforschung,* 1992, No.112, 137p., In German with English summary. Refs. p.111-128.
DLC QL368. F6 W66
Oceanography, Marine biology, Oceanographic surveys, Suspended sediments, Surface waters, Sampling, Biomass, Classifications, Scanning electron microscopy, Arctic Ocean

50-3335

Fluvial sediment transfer in the higher periglacial levels of the Central Alps, southern Hohe Tauern, Austria—evaluation of an experimental reconstruction of middle to young Holocene dynamics. [Fluvialer Sedimenttransfer in der periglazialen Höhenstufe der Zentralalpen, südliche Hohe Tauern, Osttirol—Bestandsaufnahme und Versuch einer Rekonstruktion der mittel- bis jungholozänen Dynamik]
Höfner, T., Germany. Bamberger Geographische Schriften. Heft 13, Bamberg, 1993, 121p., In German with English summary. Refs. p.108-121.
DLC GB992.A8 H64
Alpine landscapes, Watersheds, Hydrogeology, Hydrography, Paleoecology, Snow hydrology, Snowmelt, Runoff, Water erosion, Periglacial processes, Sediment transport, Suspended sediments, Vegetation patterns, Models, Austria—Alps

50-3336

Late-Holocene snow-avalanche activity in southern Norway: interpreting lichen size-frequency distributions using an alternative to simulation modelling.
McCarroll, D., Matthews, J.A., Shakesby, R.A., *Earth surface processes and landforms,* Aug. 1995, 20(5), p.465-471, 7 refs.
Avalanche deposits, Rocks, Surface properties, Age determination, Lichens, Distribution, Periodic variations, Accuracy, Norway

50-3337

Observation of Fano interference in high-pressure ice VII.
Aoki, K., Yamawaki, H., Sakashita, M., *Physical review letters,* Jan. 29, 1996, 76(5), p.784-786, 19 refs.
Ice physics, High pressure ice, Ice spectroscopy, Infrared spectroscopy, Radiation absorption, Spectra, Molecular energy levels, Molecular structure, Proton transport, Hydrogen bonds

50-3338

Imja Glacier dead-ice melt rates and changes in a supra-glacial lake, 1989-1994, Khumbu Himal, Nepal: danger of lake drainage.
Watanabe, T., Kameyama, S., Sato, T., *Mountain research and development,* Nov. 1995, 15(4), p.292-300, With French and German summaries. 13 refs.
Glacial hydrology, Mountain glaciers, Glacial lakes, Water level, Ice melting, Lake bursts, Spillways, Flooding, Countermeasures, Nepal—Imja Glacier

50-3339

Glaciological studies in the high central Andes using digital processing of satellite images.
Llorens, R.E., Leiva, J.C., *Mountain research and development,* Nov. 1995, 15(4), p.323-330, With French and German summaries. 18 refs.
Mountain glaciers, Glacier surveys, Spaceborne photography, Radiometry, Image processing, Sensor mapping, Glacier oscillation, Periodic variations, Snow optics, Andes Mountains

50-3340

Runoff and sediment yield under grazing in foothills fescue grasslands of Alberta.
Naeth, M.A., Chanasyk, D.S., *Water resources bulletin,* Feb. 1996, 32(1), p.89-95, 19 refs.
Agriculture, Meadow soils, Watersheds, Soil erosion, Soil water, Snow hydrology, Snowmelt, Runoff, Statistical analysis, Seasonal variations, Canada—Alberta

50-3341

Response of xylem ray parenchyma cells of supercooling wood tissues to freezing stress: microscopic study.
Ristic, Z., Ashworth, E.N., *International journal of plant sciences,* Nov. 1995, 156(6), p.784-792, 33 refs.
Plant physiology, Cold stress, Trees (plants), Plant tissues, Microstructure, Supercooling, Freezing, Frost resistance, Ice formation, Interstitial ice, Scanning electron microscopy, Temperature effects

50-3342

Thunderstorm electrification analysis: the dependence on the temperature-LWC diagram.
Scavuzzo, C.M., Caranti, G.M., *Journal of the atmospheric sciences,* Jan. 15, 1996, 53(2), p.349-358, 19 refs.
Cloud physics, Cloud electrification, Thunderstorms, Snow pellets, Ice crystal collision, Charge transfer, Particle size distribution, Polarization (charge separation), Water content, Temperature effects, Mathematical models

50-3343

Cold acclimation of *Arabidopsis thaliana*—effect on plasma membrane lipid composition and freeze-induced lesions.
Uemura, M., Joseph, R.A., Steponkus, P.L., *Plant physiology,* Sep. 1995, 109(1), p.15-30, 51 refs.
Plant physiology, Cryobiology, Grasses, Plant tissues, Acclimatization, Frost resistance, Cold tolerance, Damage, Electron microscopy, Microrelief, Freeze thaw tests, Temperature effects

50-3344

Icy indicators of global warming.
Denniston, D., *World watch,* Jan.-Feb. 1993, 6(1), p.9,34-35.
Glacial hydrology, Glacier melting, Glacier ablation, Alpine glaciation, Mountain glaciers, Climatic changes, Global warming, Environmental impact

50-3345

Larger agglutinated foraminifera of McMurdo Sound, Antarctica: are *Astrammina rara* and *Notodendrodes antarctikos* allogromiids incognito?
Bowser, S.S., Gooday, A.J., Alexander, S.P., Bernhard, J.M., *Marine micropaleontology,* Dec. 1995, 26(1-4), International Symposium on Foraminifera, 5th, Berkeley, CA, July 5-9, 1994. Selected papers, p.75-88, 66 refs.
Marine biology, Algae, Biomass, Microstructure, Structural analysis, Sampling, Scanning electron microscopy, Classifications, Antarctica—Explorers Cove
Explorers Cove, an embayment on the oligotrophic western side of McMurdo Sound, is noted for physical and biological similarities to the deep sea. This is an important site for foraminiferal biologists because large, deep-sea-like agglutinated taxa are abundant at depths accessible to scuba divers. Microdissection methods have revealed that many of the giant single-chambered species from this locality display an allogromiid internal organization (i.e., a monothalamous cell body encased by an organic wall or "theca"). High voltage transmission electron microscopy of thick sections were used to examine the theca of *Astrammina rara,* a dominant Explorers Cove species possessing a simple spherical test morphology, and *Notodendrodes antarctikos,* a distinctive arborescent species. The simple gross morphology of *A. rara's* agglutinated test belies the complex ultrastructure of its allogromiid-like theca, and the complex dendritic morphology of *N. antarctikos'* agglutinated test contradicts the simple ultrastructure of its theca. Additional field and laboratory observations on *A. rara* revealed that the agglutinated test can be a transient structure. These observations raise questions regarding the taxonomy and phylogeny of unilocular agglutinated foraminifera and other primitive granuloreticuloseans. The results are also discussed in terms of test function in larger agglutinated foraminifera and the ecology of this important taxon. (Auth. mod.)

50-3346

Foraminiferal assemblages from bottom sediments at Marian Cove, South Shetland Islands, West Antarctica.
Chang, S.K., Yoon, H.I., *Marine micropaleontology,* Dec. 1995, 26(1-4), International Symposium on Foraminifera, 5th, Berkeley, CA, July 5-9, 1994. Selected papers, p.223-232, 25 refs.
Marine biology, Biomass, Ecology, Bottom sediment, Distribution, Statistical analysis, Sampling, Classifications, Antarctica—Marian Cove

Foraminiferal samples were taken from bottom sediments at Marian Cove in order to determine the depth zonation and foraminiferal species composition. Benthic foraminiferal communities are mainly composed of calcareous, agglutinated, and mixed associations. The Fisher-α diversity of the total assemblage groups is close to 6.0. The dominance/diversity patterns are characterized by low dominance and high diversity. Three zones are recognized at Marian Cove with depth boundaries at 22 and 65.5 m. Areas shallower than 22 m are nearly devoid of foraminifera. Calcareous forms and/or calcareous forms mixed with agglutinated forms are relatively abundant between 22 and 65.5 m, while agglutinated forms dominate below 65.5 m. (Auth.)

50-3347

Latest Quaternary foraminifers and sediment transport in Pervenets Canyon, Bering Sea.

Starratt, S.W., *Marine micropaleontology*, Dec. 1995, 26(1-4), International Symposium of Foraminifera, 5th, Berkeley, CA, July 5-9, 1994. Selected papers, p.233-243, 67 refs.

Marine biology, Oceanography, Paleoecology, Sediment transport, Slope processes, Bottom sediment, Plankton, Biomass, Classifications, Sea level, Ice rafting, Sampling, Bering Sea

50-3348

Pleistocene agglutinated foraminifera from the Lomonosov Ridge and Amundsen Basin, Arctic Basin. Initial report on piston cores 2177-5 (KAL) and 2176-3 (KAL).

Evans, J.R., Kaminski, M.A., Cronin, T.M., Fütterer, D.K., *Marine micropaleontology*, Dec. 1995, 26(1-4), International Symposium of Foraminifera, 5th, Berkeley, CA, July 5-9, 1994. Selected papers, p.245-253, 19 refs.

Marine biology, Oceanography, Pleistocene, Paleoecology, Biomass, Bottom sediment, Sedimentation, Coring, Stratigraphy, Plankton, Sampling, Classifications, Arctic Ocean

50-3349

Biostratigraphic and paleoclimatic significance of a new Pliocene foraminiferal fauna from the central Arctic Ocean.

Mullen, M.W., McNeil, D.H., *Marine micropaleontology*, Dec. 1995, 26(1-4), International Symposium of Foraminifera, 5th, Berkeley, CA, July 5-9, 1994. Selected papers, p.273-280, 22 refs.

Paleoclimatology, Paleoecology, Oceanography, Marine biology, Bottom sediment, Biomass, Coring, Stratigraphy, Sampling, Classifications, Distribution, Arctic Ocean

50-3350

Long-term observations for monitoring of the cryosphere.

Walsh, J.E., *Climatic change*, Dec. 1995, 31(2-4), p.369-394, Refs. p.391-394.

Climatology, Climatic changes, Global change, Global warming, Snow cover distribution, Sea ice distribution, Glacier mass balance, Ice melting, Periodic variations, Remote sensing, Spaceborne photography, Long range forecasting

Variations of the cryosphere over decadal-to-century timescales are assessed by a survey of data on sea ice, snow cover, glaciers and ice sheets, permafrost and lake ice. The recent variations are generally consistent across the different cryospheric variables, especially when placed into the context of variations of temperature and precipitation. The recent warming over northern land areas has been accompanied by a decrease of snow cover, particularly during spring; the retreat of mountain glaciers is, in an aggregate sense, compatible with the observed warming; permafrost extent and lake ice duration show similar variations in areas for which data are available. Corresponding trends are not apparent, however, in data for some regions such as eastern Canada, nor in hemispheric sea ice data, especially for winter. The data also suggest an increase of snowfall over high latitudes, including the antarctic ice sheet. Estimates of both the climatic and the statistical significance of the recent variations are hampered by data inhomogeneities, the shortness of the records of many variables and the absence of central archives for data on several variables. The survey of recent variations leads to recommendations concerning the use of historical data, *in situ* measurements, and remote sensing applications in the monitoring of the cryosphere. (Auth. mod.)

50-3351

Climate monitor, Vol.22. Norwich, UK, University of East Anglia, 1995, 121p., 6 refs, (p.73).

Climate, Air temperature, Meteorological data

All data included in this issue covers the period from Dec. 1992 through Nov. 1993, unless a different period is specified. Summaries of climatic events and country by country exceptional climatic events are presented, along with 500mb anomalies for both hemispheres. Additionally, separate sections give surface air temperature data for Arctic (59) and antarctic (25) stations. These data are given in both graphic and tabular form. Also included for these stations are tables of mean surface temperature data for the period 1946-1960 (arctic) and for 1957-1975 (antarctic).

50-3352

Contrasting atmospheric and climate dynamics of the last-glacial and Holocene periods.

Ditlevsen, P.D., Svensmark, H., Johnsen, S., *Nature*, Feb. 29, 1996, 379(6568), p.810-812, 19 refs.

Paleoclimatology, Oxygen isotopes, Isotope analysis, Ice cores, Greenland

50-3353

New type of glacial deposit.

Appel, P.W.U., *Nature*, Feb. 15, 1996, 379(6566), p.590-591, 2 refs.

Glacial deposits, Minturn circles, Greenland

50-3354

Recent atmospheric warming and retreat of ice shelves on the Antarctic Peninsula.

Vaughan, D.G., Doake, C.S.M., *Nature*, Jan. 25, 1996, 379(6563), p.328-331, 32 refs.

Air temperature, Climatic changes, Temperature effects, Ice shelves, Ablation, Antarctica—Antarctic Peninsula

Analyses of 50-year meteorological records have revealed atmospheric warming on the Antarctic Peninsula since 1978 and shown that a number of ice shelves have retreated. Presented here is a time-series of observations of the areal extent of nine ice shelves on the Antarctic Peninsula, showing that five northerly ones have retreated dramatically in the past fifty years, while those further south show no clear trend. Comparison with air-temperature data shows that the pattern and magnitude of ice-shelf retreat is consistent with the existence of an abrupt thermal limit on ice-shelf viability, the isotherm associated with this limit having been driven south by atmospheric warming. Ice shelves therefore appear to be sensitive indicators of climate change. (Auth. mod.)

50-3355

Measuring a moving glacier.

Sauber, J., Plafker, G., Gipson, J., *Earth in space*, Nov. 1995, 8(3), p.4-5.

Glacier flow, Glacier surveys, Flow measurement, Remote sensing, Geophysical surveys, Glacier surges, Spacecraft, Radar echoes

50-3356

Bering glacier resumes its surge.

Molnia, B.F., *Earth in space*, Nov. 1995, 8(3), p.6.

Glacier flow, Glacier surges, Glacier surveys, Calving, Icebergs, United States—Alaska—Bering Glacier

50-3357

Use of thermal analysis in the development of a better understanding of frozen food stability.

Goff, H.D., *Pure and applied chemistry*, Nov. 1995, 67(11), p.1801-1808, 27 refs.

Solutions, Colloids, Frozen liquids, Microstructure, Thermal analysis, Ice crystal growth, Chemical composition, Temperature effects, Ice water interface, Liquid phases, Thermal diffusion, Phase transformations, Temperature measurement

50-3358

Refractive index of ice in the 1.4-7.8-μm spectral range.

Gosse, S., Labrie, D., Chylek, P., *Applied optics*, Oct. 1, 1995, 34(28), p.6582-6586, 9 refs.

Ice crystal optics, Ice physics, Refractivity, Wave propagation, Indexes (ratios), Infrared spectroscopy, Ice spectroscopy, Radiation absorption, Spectra

50-3359

Sources of primary production, benthic-pelagic coupling, and trophic relationships within the Northeast Water Polynya: insights from $\delta^{13}C$ and $\delta^{15}N$ analysis.

Hobson, K.A., Ambrose, W.G., Jr., Renaud, P.E., *Marine ecology progress series*, Nov. 23, 1995, 128(1-3), p.1-10, 63 refs.

Oceanography, Polynyas, Marine biology, Ecosystems, Biomass, Algae, Water chemistry, Sedimentation, Sampling, Nutrient cycle, Ice cover effect, Carbon isotopes, Isotope analysis, Greenland Sea

50-3360

Non-invasive determination of freezing effects in blueberry fruit tissue by magnetic resonance imaging.

Gamble, G.R., *Journal of food science*, May-June 1994, 59(3), p.571-573,610, 8 refs.

Porous materials, Frozen liquids, Plant tissues, Deformation, Water transport, Structural analysis, Imaging, Resolution, Nuclear magnetic resonance, Freeze thaw cycles, Spectra

50-3361

Thermal stratification effects near a vertical ice slab in cold water.

Kukulka, D.J., Lamb, J., Mollendorf, J.C., National Heat Transfer Conference, 29th, Atlanta, GA, Aug. 8-11, 1993. Visualization of heat transfer processes. HTD Vol.252, New York, American Society of Mechanical Engineers, 1993, p.91-98, 15 refs. For another version see 49-6417.

DLC TJ260.N36

Ice water interface, Ice melting, Floating ice, Temperature gradients, Temperature measurement, Stratification, Convection, Buoyancy, Unsteady flow, Heat transfer, Heat flux

50-3362

On conditions for local thermal equilibrium in unsaturated porous media with simultaneous liquid flow and freezing.

Tao, Y.X., Gray, D.M., National Heat Transfer Conference, 29th, Atlanta, GA, Aug. 8-11, 1993. Heat transfer in porous media. HTD Vol.240, New York, American Society of Mechanical Engineers, 1993, p.85-92, 6 refs.

DLC TJ260.N36

Frozen ground mechanics, Frozen ground thermodynamics, Soil freezing, Phase transformations, Seepage, Ice water interface, Temperature variations, Heat flux, Permeability, Heat transfer, Mathematical models

50-3363

Observations of molecular ices.

Whittet, D.C.B., Graduate Series in Astronomy. Dust and chemistry in astronomy. Edited by T.J. Millar et al, London, Institute of Physics Publishing, 1993, p.9-36, Refs. p.32-35.

DLC QB791.D84

Extraterrestrial ice, Cosmic dust, Infrared spectroscopy, Radiation absorption, Spectra, Ice detection, Molecular structure, Molecular energy levels, Geochemistry

50-3364

Shear-diffusion model of till genesis based on the dispersal pattern of indicator rocks in the Grand-Volume Till of Central Gaspésie, Québec, Canada.

Charbonneau, R., David, P.P., *Boreas*, Dec. 1995, 24(4), p.281-292, 55 refs.

Glacial geology, Glacial deposits, Distribution, Glacial erosion, Bedrock, Sediment transport, Quaternary deposits, Rock mechanics, Shear flow, Subglacial observations, Lithology, Canada—Quebec—Gaspésie

50-3365

Pleistocene and Holocene glacier thicknesses, transport histories and dynamics inferred from SEM microtextures on quartz particles.

Mahaney, W.C., *Boreas*, Dec. 1995, 24(4), p.293-304, 45 refs.

Pleistocene, Glacial geology, Quaternary deposits, Glacial deposits, Glacier thickness, Ice solid interface, Cracking (fracturing), Scanning electron microscopy, Soil texture, Microrelief, Correlation, Antarctica—Transantarctic Mountains

Recent analyses of microtextures on quartz particles (63-2000 μm) from Quaternary tills in Antarctica, Germany, southern Ontario, western Wyoming, Tibet, the Austrian Alps, and Mount Kenya show that glacial fracture and abrasion microfeatures may be used to infer the thickness, transport history and ice dynamics of Pleistocene and Holocene glaciers. Quartz sands emplaced by continental and mountain ice were studied by scanning electron microscopy after transport over various distances in glaciers estimated to range from 150 m to 1500 m thick. Relative differences in ice thicknesses, distances of transport, and/or ice dynamics appear to have determined the frequency of occurrence and type of microtextures occurring on sand-size particles. Subparallel fracture microfeatures tend to increase in frequency over a greater proportion of particle surfaces

with increasing ice thickness and distance of transport. Conchoidal fractures, the most typical in quartz, and to some degree crescentic gouges abound on fragments emplaced by continental ice. Other possible fracture and fragmentation mechanisms, producing features of generally glacial origin, involve low velocity impacts induced by stick-slip mechanisms, under variable cryostatic stresses, producing fracturing and abrasion across particle surfaces. Their generation implies high local contact stresses associated with high strain rates. (Auth.)

50-3366

Nunataks of the last ice sheet in northwest Scotland.

McCarroll, D., Ballantyne, C.K., Nesje, A., Dahl, S.O., *Boreas*, Dec. 1995, 24(4), p.305-323, 63 refs.

Glaciation, Pleistocene, Glacial geology, Glacial erosion, Frost action, Regolith, Altitude, Nunataks, Periglacial processes, Weathering, Lithology, Hardness tests, United Kingdom—Scotland

50-3367

Late Weichselian shore displacement in Halland, southwestern Sweden: relative sea-level changes and their glacio-isostatic implications.

Berglund, M., *Boreas*, Dec. 1995, 24(4), p.324-344, 74 refs.

Pleistocene, Marine geology, Glacial geology, Shoreline modification, Isostasy, Sea level, Stratigraphy, Sediments, Radioactive age determination, Palynology, Geochronology, Sweden

50-3368

Palynology and sediment slumping in a high arctic Greenland lake.

Fredskild, B., *Boreas*, Dec. 1995, 24(4), p.345-354, 28 refs.

Paleoecology, Paleoclimatology, Climatic changes, Lacustrine deposits, Sedimentation, Coring, Palynology, Polynyas, Radioactive age determination, Greenland

50-3369

Paleoecology of Beringia.

Wenner-Gren Foundation for Anthropological Research Symposium, 81st, Burg Wartenstein, Austria, June 8-17, 1979, Hopkins, D.M., ed, Matthews, J.V., Jr., ed, Schweger, C.E., ed, Young, S.B., ed, New York, Academic Press, 1982, 489p., Refs. passim. For selected papers see 50-3370 through 50-3379.

DLC QE720.W46

Paleoecology, Paleoclimatology, Pleistocene, Arctic landscapes, Tundra terrain, Tundra vegetation, Tundra climate, Revegetation, Vegetation patterns, Climatic changes, Landscape development, Models, Biogeography, Russia—Siberia, United States—Alaska, Canada—Yukon Territory

50-3370

Evolution of lowland landscapes in northeastern Asia during Late Quaternary time.

Tomirdiaro, S.V., Wenner-Gren Foundation for Anthropological Research Symposium, 81st, Burg Wartenstein, Austria, June 8-17, 1979. Paleoecology of Beringia. Edited by D.M. Hopkins et al, New York, Academic Press, 1982, p.29-37, Refs. p.446-474.

DLC QE720.W46

Arctic landscapes, Pleistocene, Paleoclimatology, Plains, Tundra terrain, Periglacial processes, Geocryology, Geomorphology, Landscape development, Thermokarst lakes, Alassy, Loess, Russia—Siberia

50-3371

Comparison of the development of tundra-steppe environments in west and east Beringia: pollen and macrofossil evidence from key sections.

Giterman, R.E., Sher, A.V., Matthews, J.V., Jr., Wenner-Gren Foundation for Anthropological Research Symposium, 81st, Burg Wartenstein, Austria, June 8-17, 1979. Paleoecology of Beringia. Edited by D.M. Hopkins et al, New York, Academic Press, 1982, p.43-73, Refs. p.446-474.

DLC QE720.W46

Pleistocene, Paleoecology, Paleoclimatology, Tundra terrain, Arctic landscapes, Steppes, Tundra vegetation, Vegetation patterns, Sedimentation, Stratigraphy, Palynology, Landscape development, Russia—Siberia

50-3372

Vegetational history of western Alaska during the Wisconsin glacial interval and the Holocene.

Ager, T.A., Wenner-Gren Foundation for Anthropological Research Symposium, 81st, Burg Wartenstein, Austria, June 8-17, 1979. Paleoecology of Beringia. Edited by D.M. Hopkins et al, New York, Academic Press, 1982, p.75-93, Refs. p.446-474.

DLC QE720.W46

Paleoecology, Pleistocene, Subarctic landscapes, Tundra vegetation, Vegetation patterns, Quaternary deposits, Lacustrine deposits, Palynology, Spectra, United States—Alaska

50-3373

Late Pleistocene vegetation of eastern Beringia: pollen analysis of dated alluvium.

Schweger, C.E., Wenner-Gren Foundation for Anthropological Research Symposium, 81st, Burg Wartenstein, Austria, June 8-17, 1979. Paleoecology of Beringia. Edited by D.M. Hopkins et al, New York, Academic Press, 1982, p.95-112, Refs. p.446-474.

DLC QE720.W46

Pleistocene, Paleoecology, Vegetation patterns, Tundra vegetation, Floodplains, Alluvium, Stratigraphy, Radioactive age determination, Geochronology, Classifications, Palynology, United States—Alaska

50-3374

East Beringia during Late Wisconsin time: a review of the biotic evidence.

Matthews, J.V., Jr., Wenner-Gren Foundation for Anthropological Research Symposium, 81st, Burg Wartenstein, Austria, June 8-17, 1979. Paleoecology of Beringia. Edited by D.M. Hopkins et al, New York, Academic Press, 1982, p.127-150, Refs. p.446-474.

DLC QE720.W46

Pleistocene, Paleoecology, Paleobotany, Ecosystems, Vegetation patterns, Sedimentation, Stratigraphy, Palynology, Classifications, Canada—Yukon Territory

50-3375

History of the steppe-tundra concept.

Hibbert, D., Wenner-Gren Foundation for Anthropological Research Symposium, 81st, Burg Wartenstein, Austria, June 8-17, 1979. Paleoecology of Beringia. Edited by D.M. Hopkins et al, New York, Academic Press, 1982, p.153-156, Refs. p.446-474.

DLC QE720.W46

Pleistocene, Paleoecology, Paleoclimatology, Tundra vegetation, Steppes, Landscape development, Terminology, Vegetation patterns

50-3376

Relics of the xerophyte vegetation of Beringia in northeastern Asia.

IUrtsev, B.A., Wenner-Gren Foundation for Anthropological Research Symposium, 81st, Burg Wartenstein, Austria, June 8-17, 1979. Paleoecology of Beringia. Edited by D.M. Hopkins et al, New York, Academic Press, 1982, p.157-177, Refs. p.446-474.

DLC QE720.W46

Paleoecology, Pleistocene, Arctic landscapes, Tundra terrain, Vegetation patterns, Classifications, Grasses, Steppes, Russia—Siberia

50-3377

Vegetation of land-bridge Beringia.

Young, S.B., Wenner-Gren Foundation for Anthropological Research Symposium, 81st, Burg Wartenstein, Austria, June 8-17, 1979. Paleoecology of Beringia. Edited by D.M. Hopkins et al, New York, Academic Press, 1982, p.179-191, Refs. p.446-474.

DLC QE720.W46

Paleoecology, Pleistocene, Paleoclimatology, Vegetation patterns, Ecosystems, Revegetation, Palynology, Models

50-3378

Approaches to reconstructing the climate of the steppe-tundra biome.

Barry, R.G., Wenner-Gren Foundation for Anthropological Research Symposium, 81st, Burg Wartenstein, Austria, June 8-17, 1979. Paleoecology of Beringia. Edited by D.M. Hopkins et al, New York, Academic Press, 1982, p.195-204, Refs. p.446-474.

DLC QE720.W46

Paleoclimatology, Atmospheric circulation, Paleoecology, Arctic landscapes, Steppes, Tundra climate, Vegetation patterns, Snow line, Models

50-3379

Approaches to mathematical modeling of the steppe-tundra paleoclimate.

Gal-Chen, T., Wenner-Gren Foundation for Anthropological Research Symposium, 81st, Burg Wartenstein, Austria, June 8-17, 1979. Paleoecology of Beringia. Edited by D.M. Hopkins et al, New York, Academic Press, 1982, p.205-218, Refs. p.446-474.

DLC QE720.W46

Paleoecology, Paleoclimatology, Steppes, Tundra climate, Boundary value problems, Climatic changes, Radiation balance, Mathematical models

50-3380

Alpine glacial advance in relation to a proxy summer temperature index based mainly on wine harvest dates, A.D. 1453-1973.

Bray, J.R., *Boreas*, Mar. 1, 1982, 11(1), p.1-10, 29 refs.

DLC QE696.B66

Alpine glaciation, Glacier oscillation, Climatology, Air temperature, Temperature variations, Indexes (ratios), Periodic variations, Statistical analysis, Correlation

50-3381

Sedimentology and geomorphology of drumlins in western Allgäu, south Germany.

De Jong, M.G.G., Rappol, M., Rupke, J., *Boreas*, Mar. 1, 1982, 11(1), p.37-45, 20 refs.

DLC QE696.B66

Glacial geology, Quaternary deposits, Glacial deposits, Glacier beds, Deltas, Geomorphology, Sedimentation, Glacial erosion, Lithology, Germany

50-3382

Identification of the Holocene-Pleistocene boundary in the Bering Sea by diatoms.

Baldauf, J.G., *Boreas*, Mar. 1, 1982, 11(1), p.113-118, 19 refs.

DLC QE696.B66

Pleistocene, Paleoclimatology, Marine geology, Quaternary deposits, Marine deposits, Algae, Paleoecology, Drill core analysis, Bering Sea

50-3383

Late-glacial advances in the western Italian Alps.

Porter, S.C., Orombelli, G., *Boreas*, June 1, 1982, 11(2), p.125-140, 31 refs.

DLC QE696.B66

Alpine glaciation, Glacial geology, Glacier oscillation, Glacier mass balance, Pleistocene, Glacial deposits, Moraines, Geochronology, Periodic variations, Italy—Alps

50-3384

Precipitation gauge. [Niederschlagsmesser]

Weydert, M., Raes, F., *European Patent Office. Patent*, Oct. 8, 1990, 5p., EP 0 442 553 A1.

Precipitation gages, Design, Snowflakes, Hailstones, Raindrops

50-3385

Glaciers, snow and ice—dictionary of glaciology, snow and avalanche research in Switzerland. [Gletscher, Schnee und Eis—Das Lexikon zu Glaziologie, Schnee- und Lawinenforschung in der Schweiz]

Ziehr, W., ed, Lucerne, Verlag Schweizer Lexikon Mengis + Zihr, 1993, 103p., In German.

DLC GB2523.G57

Glaciology, Mountain glaciers, Snow surveys, Alpine glaciation, Snow cover stability, Avalanches, Dictionaries, Terminology, Switzerland—Alps

50-3386

Passive margin uplift around the North Atlantic region and its role in northern hemisphere late Cenozoic glaciation.

Eyles, N., *Geology*, Feb. 1996, 24(2), p.103-106, 51 refs.

Pleistocene, Paleoclimatology, Marine geology, Ice sheets, Glaciation, Tectonics, Topographic effects, Wind factors, Ice age theory

50-3387

Diatoms in South Pole ice: implications for eolian contamination of Sirius Group deposits.

Kellogg, D.E., Kellogg, T.B., *Geology*, Feb. 1996, 24(2), p.115-118, 38 refs.

Paleoclimatology, Ice sheets, Glacier oscillation, Ice cores, Impurities, Geochemistry, Algae, Classifications, Sediment transport, Sedimentation, Wind factors, Geochronology, Antarctica—Amundsen-Scott Station

Marine and nonmarine diatoms occur throughout a South Pole ice core spanning the past 2000 yr. Similar diatoms occur in East and West Antarctica at Siple and Taylor domes. Because there are no local diatom sources at these locations, diatoms must have been carried by winds from coastal or extra-antarctic sites. These data demonstrate widespread historical eolian transport of diatoms to the antarctic ice sheets, supporting the view that Sirius Group sediments were contaminated by late Neogene diatoms long after they were deposited. If so, there is no reason to postulate a Pliocene deglaciation event in East Antarctica. (Auth. mod.)

50-3388

Expanded record of Quaternary oceanographic change: Amerasian Arctic Ocean.

Ishman, S.E., Poliak, L.V., Poore, R.Z., *Geology*, Feb. 1996, 24(2), p.139-142, 22 refs.

Oceanography, Pleistocene, Ocean currents, Marine deposits, Paleoecology, Classifications, Quaternary deposits, Drill core analysis, Stratigraphy, Sedimentation, Correlation, Arctic Ocean

50-3389

Eocene-Oligocene transition in the southern ocean: history of water mass circulation and biological productivity.

Diester-Haass, L., Zahn, R., *Geology*, Feb. 1996, 24(2), p.163-166, 43 refs.

Oceanography, Pleistocene, Paleoclimatology, Ocean currents, Bottom sediment, Climatic changes, Biomass, Paleoecology, Isotope analysis, Geochronology, Antarctica—Weddell Sea

High-resolution records of carbon and oxygen isotopes and benthic foraminiferal accumulation rates for the Eocene-Oligocene section at Ocean Drilling Program Site 689 (Maud Rise, Weddell Sea; paleodepth about 1500 m) were used to infer variations in paleoproductivity in relation to changes in climate and ventilation of the deeper-water column. The benthic foraminiferal abundance and isotope records show short-term fluctuations at periodicities of 100 and 400 ka, implying orbitally driven climatic variations. Both records suggest that intermediate-depth water chemistry and primary productivity changed in response to climate. It is therefore inferred that, at this time, temperature fluctuations increased and a proto-polar front formed in conjunction with the first distinct pulsations in size of the antarctic ice sheet. This major change might have resulted from an initial opening of the Drake Passage at 37 Ma, at least for surface- and intermediate-water circulation. (Auth. mod.)

50-3390

Fundamentals of ice lens formation.

Takagi, S., MP 3784, National Heat Transfer Conference, 15th, San Francisco, CA, Aug. 10-13, 1975, 25p., 27 refs. For another version see 33-2083.

Soil freezing, Frozen ground thermodynamics, Geocryology, Ice water interface, Phase transformations, Ice formation, Freezing front, Ice lenses, Ice pressure, Frost heave, Soil water migration, Mathematical models

A new concept of the freezing of water, called "segregation freezing", is proposed to explain the creation of the suction force that draws pore water up to the interface of a growing ice lens. The temperature of segregation freezing is shown to be lower than that of normal freezing (in-situ freezing). This difference determines the pressure that the ice lens exerts while growing and carrying the overlying weight. On the assumption that the soil structure is rigid, equations governing the simultaneous flow of heat and water are formulated, and solved for the limit of time $t \to 0$ with a combination of analytical and numerical methods. Numerical computation of the solution yields a result that is reasonable compared with experience in laboratory and in the field.

50-3391

Effects of climatic change on permafrost in the arid and semiarid regions of China.

Xie, Y.Y., *Chinese journal of arid land research*, 1995, 8(3), p.201-215, 30 refs.

Permafrost transformation, Permafrost distribution, Periglacial processes, Classifications, Paleoclimatology, Climatic changes, Forecasting, Engineering geology, China

50-3392

High pressure-differential thermal analysis of ice-water equilibrium at 1.5-5.0 GPa.

Xu, Y.S., Xie, H.S., Zheng, H.F., Guo, J., Zhang, Y.M., Xu, H.G., *Chinese science bulletin*, Dec. 1995, 40(24), p.2049-2051, 5 refs.

Geochemistry, Geologic processes, Ice water interface, Phase transformations, High pressure ice, High pressure tests, Water temperature, Thermal analysis, Thermodynamics, Simulation

50-3393

Effects of ethanol as an additive on odor detection thresholds of Alaskan gasolines at sub-arctic temperatures.

Zhao, X.H., Smith, S.L., Duffy, L.K., *Chemosphere*, Dec. 1995, 31(11-12), p.4531-4540, 11 refs.

Air pollution, Atmospheric composition, Sampling, Hydrocarbons, Fuels, Admixtures, Aerosols, Detection, Chemical composition, Vapor diffusion, Temperature effects, Environmental impact, United States—Alaska

50-3394

Nano- and microplankton dynamics during the spring *Phaeocystis* sp. bloom in McMurdo Sound, Antarctica.

Stoecker, D.K., Putt, M., Moisan, T., *Marine Biological Association. Journal*, Nov. 1995, 75(4)), p.815-832, 40 refs.

Marine biology, Ecosystems, Plankton, Microbiology, Nutrient cycle, Biomass, Seasonal variations, Sampling, Antarctica—McMurdo Sound

The seasonal development of the microbial food web in eastern McMurdo Sound was investigated during and immediately after the 1990-91 bloom of *Phaeocystis* sp. From Nov. 23 to Dec. 7, which was before the appearance of macroscopic colonies of *Phaeocystis*, both phytoplankton and Protozoa were in low abundance. During the *Phaeocystis* bloom (ca Dec. 10 to Jan. 7), phytoplankton biomass was high and was dominated by colonial and single-celled *Phaeocystis*, but other phytoplankton taxa, including diatoms and photosynthetic dinoflagellates, co-occurred. Heterotrophic nanoplankton and protozoan microzooplankton increased dramatically in biomass during the bloom. In the post-bloom period, the heterotrophic protistan assemblage became very diverse, with numerous trophic linkages within the microbial food web. The abundance and diversity of the heterotrophic protist assemblage suggest that there was little control of protists by metazoans and that the microbial food web, consisting of bacteria, algae and Protozoa, was poorly coupled to metazoan zooplankton. (Auth. mod.)

50-3395

Population dynamics of *Magellania fragilis*, a brachiopod dominating a mixed-bottom macrobenthic assemblage on the antarctic shelf.

Brey, T., Peck, L.S., Gutt, J., Hain, S., Arntz, W.E., *Marine Biological Association. Journal*, Nov. 1995, 75(4)), p.857-869, 59 refs.

Oceanography, Marine biology, Biomass, Ecology, Distribution, Growth, Seasonal variations, Ocean bottom, Sampling

A dense assemblage of the brachiopod *Magellania fragilis* was sampled by trawl and underwater photography during the expedition ANT IX/3 (1991) of RV *Polarstern* on the shelf of the Lazarev Sea. Mean abundance and biomass estimates for *M. fragilis* were 26.15 individuals/m^2 and 1.13 g AFDM/m^2, respectively. Growth bands visible on the shell were interpreted as annual growth marks caused by the strong seasonality of food input to the benthos and were treated as size-at-age data. The annual somatic P/B ratio was very low, and annual production amounted to 0.052 g AFDM/m^2/y at this site. These results indicate that *M. fragilis* is a comparatively slow-growing species with very low annual productivity. (Auth. mod.)

50-3396

Application of lichenometry and Schmidt hammer to the relative-age dating of pre-Little Ice Age moraines, examples from the glacier forelands of Guslarferner, Mitterkarferner, Rofenkarferner and Vernagtferner (Ötzal Alps/Austria). [Anwendung von Lichenometrie und Schmidt-Hammer zur relativen Altersdatierung prä-frührezenter Moränen am Beispiel der Vorfelder von Guslar-, Mitterkar-, Rofenkar- und Vernagtferner (Ötztaler Alpen/Österreich)]

Winkler, S., Shakesby, R.A., *Petermanns Geographische Mitteilungen*, 1995, 139(5-6), p.283-304, In German with English and Russian summaries. 41 refs.

Glacial geology, Mountain glaciers, Alpine landscapes, Glacier oscillation, Moraines, Talus, Geochronology, Lichens, Rock properties, Hardness tests, Age determination, Accuracy, Austria—Alps

50-3397

Alpine glaciers in the Little Ice Age. [Alpengletscher in der Kleinen Eiszeit]

Zumbühl, H.J., et al, *Die Alpen*, 1988, 64(3), Zeitschrift. Schweizer Alpen-Clubs, p.129-322 + figures, In German. Refs. p.319-322.

DLC GB2524.A47 Z86

Alpine glaciation, Alpine landscapes, Glacial geology, Glacier oscillation, Glacier surveys, Mountain glaciers, Periodic variations, History, Switzerland—Alps

50-3398

Alpine glaciers in the Little Ice Age—catalogue and C^{14} documentation. [Alpengletscher in der Kleinen Eiszeit—Katalog und ^{14}C-Dokumentation]

Zumbühl, H.J., Holzhauser, H., Geographia Bernensia G. Vol.31, Bern, Geographisches Institute der Universität Bern, 1990, 36p., In German. Refs. p.28-35. Supplementary volume to special issue of Die Alpen, 3rd Quarter, 1988.

DLC GB2524.A47 Z86

Alpine glaciation, Mountain glaciers, Glacier oscillation, Glacial deposits, Radioactive age determination, Periodic variations, Geochronology, Bibliographies, Switzerland—Alps

50-3399

On the summer distribution of mesozooplankton in the Nansen Basin, Arctic Ocean. [Zur sommerlichen Verteilung des Mesozooplanktons im Nansen-Becken, Nordpolarmeer]

Mumm, N., *Berichte zur Polarforschung*, 1991, Vol.92, 146p. + appends., In German with English summary. Refs. p.128-146.

DLC QL126.M85

Marine biology, Oceanographic surveys, Sampling, Plankton, Biomass, Ecology, Distribution, Classifications, Nansen Basin

50-3400

Circulation mechanisms in the atmosphere of the Northern Hemisphere in the 20th century. [Tsirkuliatsionnye mekhanizmy v atmosfere severnogo polushariia v XX stoletii]

Dzerdzeevskiĭ, B.L., *Akademiia nauk SSSR. Institut geografii. Materialy meteorologicheskikh issledovanii*, 1968, 240p., In Russian with English summary and table of contents. 64 refs.

Polar atmospheres, Atmospheric circulation, Climatic changes, Climatic factors, Seasonal variations

50-3401

Comparative study of antarctic, arctic and Himalayan ice.

Pathak, R.C., *Defence science journal*, July 1989, 39(3), p.269-276, 11 refs.

DLC U395.I5D4

Polar regions, Mountains, Ice density, Ice structure, Snow density, Snow morphology

Ice samples obtained at arctic and antarctic latitudes have dissimilar properties. Even the salient properties of snow and ice in the western and central Himalayas vary due to differing free water contents. A study has been carried out on ice and snow data in these areas and their stratigraphic and metamorphic characteristics have been compared. In the present paper, an analysis of these properties is presented.

50-3402

Outfit for improving potability of water in snow-bound areas.

Gopal, R., Ghosh, P.K., *Defence science journal,* Jan. 1991, 41(1), p.39-43, 10 refs.

DLC U395.15D4

Meltwater, Snowmelt, Water treatment, Water supply, Minerals, Mountains, Kits

50-3403

Summer plankton beneath the McMurdo Ice Shelf at White Island, McMurdo Sound, Antarctica.

Knox, G.A., Waghorn, E.J., Ensor, P.H., *Polar biology,* Feb. 1996, 16(2), p.87-94, Refs. p.94.

Plankton, Marine biology, Sea ice, Ice shelves, Ocean environments, Antarctica—McMurdo Ice Shelf

The zooplankton of the under-shelf-ice ecosystem at White I. was investigated during Dec. 1976 and Jan. 1977. The water column was sampled through a hole in the McMurdo Ice Shelf over a water depth of 67 m. Seawater temperatures under the ice shelf ranged from -1.91 to 1.96°C. Dissolved oxygen levels ranged from 5.0-6.05 ml/l in early Dec. to 4.65-4.8 ml/l in late Jan. Current speeds of up to 0.13 m/s were recorded at a depth of 50 m and a predominantly northward flow was detected. Light levels under the shelf ice were low, with less than 1% of the incident light being transmitted to a depth of 3 m. No chlorophyll *a* was detected within the water column throughout the investigation. Mean zooplankton biomass values in the water column ranged from 12 to 447 mg wet weight/m^3 and were similar to values recorded elsewhere from antarctic inshore waters, but were much higher than those recorded from under seasonal sea ice in McMurdo Sound. Thirty-two zooplankton species were recorded. Among the Copepoda there were a number of species, especially among the Harpacticoidea, that had not been found previously in McMurdo Sound and the Ross Sea, but that are known to be associated with ice in other localities in Antarctica. (Auth. mod.)

50-3404

Inorganic carbon uptake by an antarctic sea-ice diatom, *Nitzschia frigida*.

Mitchell, C., Beardall, J., *Polar biology,* Feb. 1996, 16(2), p.95-99, Refs. p.99.

Marine biology, Algae, Sea ice, Antarctica—Davis Bay

There have been no studies to date on the mechanisms of inorganic carbon acquisition by antarctic microalgae. Consequently, the authors have examined inorganic carbon (DIC) use in *Nitzschia frigida*, a diatom typical of the antarctic bottom-ice community. The $K_{0.5}(CO_2)$ of photosynthesis in this organism was estimated to be 1.09 μM at pH 7.5. The internal concentration of DIC was approximately 4050 μM at an external [DIC] of 45 μM. At air-equilibration levels of inorganic carbon this would be sufficient for a ten-fold accumulation ratio of CO_2. Cells of *N. frigida* are capable of carbon-dependent photosynthesis at rates that exceed that expected from uncatalysed CO_2 supply to the cell. About 25% of the total carbonic anhydrase activity appears to be associated with the cell surface in *N. frigida*. These results support the hypothesis that *N. frigida*, like many microalgae from temperate waters, has an active carbon-concentrating mechanism, associated with the ability to utilize external HCO_3^- for photosynthesis. (Auth.)

50-3405

Typification of the underlying surface of USSR territory for the collection of supporting information in the aerospace monitoring system. [Tipizatsiia podstilaiushcheĭ poverkhnosti territorii SSSR dlia sbora opornoĭ informatsii v sisteme aerokosmicheskogo monitoringa]

Apostolov, IU.S., Konstantinova, M.F., Informatsionnye problemy izucheniia biosfery; Geoekoinformatsionnye tsentry; sbornik nauchnykh trudov (Information problems in studying the biosphere; Geoecoinformation centers; collected scientific papers). Edited by A.A. Voronov and V.V. Bugrovskiĭ, Moscow, Nauka, 1992, p.72-86, In Russian.

Ecology, Data processing, Spaceborne photography, Analysis (mathematics), Tundra terrain, Mountains, Alpine tundra, Forest land, Russia

50-3406

Technological effects on tundra ecosystems and the recultivation of disturbed territory. [Tekhnogennye vozdeĭstviia na tundrovye ekosistemy i rekul'tivatsiia narushennykh territoriĭ]

Sumina, O.I., St. Petersburg, Sankt-Peterburgskiĭ gosudarstvennyĭ universitet, 1992, 42p., In Russian. Refs. p.34-42.

Ecosystems, Environmental impact, Tundra terrain, Tundra vegetation, Revegetation, Pollution, Mining, Drilling, Pipelines, Forest fires, Construction, Transportation, Russia—Far North

50-3407

Recovery characteristics for forest ecosystems after fires.

Gorshkov, V.V., Gorshkov, V.G., *Rossiĭskaia akademiia nauk. Peterburgskiĭ institut iadernoĭ fiziki. [Trudy],* Dec. 1992, 40p., With Russian summary. 34 refs.

Forest ecosystems, Forest fires, Revegetation, Lichens, Mosses, Russia—Kola Peninsula

50-3408

Laboratory performance of an ice-on-coil, thermal-energy storage system for residential and light commercial applications.

Lee, A.H.W., Jones, J.W., *Energy,* Feb. 1996, 21(2), p.115-130, 8 refs.

Cooling systems, Heat sources, Latent heat, Heat recovery, Refrigeration, Ice thermal properties, Ice formation, Cooling rate, Ice solid interface, Design, Performance

50-3409

Water behavior in nonionic surfactant systems. I: subzero temperature behavior of water in nonionic microemulsions studied by DSC.

Garti, N., Aserin, A., Ezrahi, S., Tiunova, I., Berkovic, G., *Journal of colloid and interface science,* Mar. 1, 1996, 178(1), p.60-68, 45 refs.

Surfactants, Colloids, Thermal analysis, Hygroscopic water, Interfaces, Water temperature, Molecular structure, Thermodynamic properties, Unfrozen water content, Temperature measurement, Low temperature tests, Temperature effects, Solubility

50-3410

Influence of a crack in a floating elastic plate on the propagation of flexural gravitational waves.

Bukatov, A.E., Zav'ialov, D.D., *Journal of applied mechanics and technical physics,* Jan. 1996, 36(4), p.628-632, Translated from Prikladnaia mekhanika i tekhnicheskaia fizika. 7 refs.

Sea ice, Oceanography, Floating ice, Ice mechanics, Ice cracks, Ice edge, Ice elasticity, Oscillations, Hydrodynamics, Gravity waves, Wave propagation, Ice water interface, Mathematical models

50-3411

Ice sheets, climate change and sea level.

Drewry, D., *Physics world,* Jan. 1996, 9(1), p.29-33, 5 refs.

Climatology, Climatic changes, Global warming, Surface temperature, Ice sheets, Glacier melting, Glacier oscillation, Glacier mass balance, Sea level, Air ice water interaction, Forecasting

This paper discusses the potential influence of global warming on the ablation of ice sheets in Antarctica and Greenland, emphasizing the role of glacial meltwater in elevating sea level.

50-3412

Mathematical model for the dynamics of radionuclides, heavy metals, and petroleum hydrocarbons in the arctic basin.

Krapivin, V.F., Lan, H.B., *Physical oceanography,* 1995, 6(6), p.435-451, Translated from Morskoi gidrofizicheskiĭ zhurnal. 30 refs.

Oceanography, Ecosystems, Marine biology, Water pollution, Ice water interface, Hydrocarbons, Metals, Radioactivity, Environmental impact, Mathematical models, Computerized simulation, Forecasting, Arctic Ocean

50-3413

History of the exploration of the vascular flora of Greenland.

Pringle, J.S., *Canadian field-naturalist,* July-Sep. 1995, 109(3), p.362-377, Refs. p.375-377.

Plants (botany), Arctic landscapes, Plant ecology, Exploration, Research projects, Expeditions, Vegetation patterns, History, Greenland

50-3414

Atmospheric observing systems and their data management support structure.

Stirling, L.M., Workshop on Canadian Climate System Data, Québec, Canada, May 16-18, 1994. Proceedings, Quebec, Canadian Climate Program Board, 1994, p.41-61, 17 refs.

Climatology, Weather stations, Meteorological data, Icing, Snowfall, Data processing, Weather forecasting, Weather observations, Classifications, Canada

50-3415

Cryospheric observing systems and data management.

Barry, R.G., Workshop on Canadian Climate System Data, Québec, Canada, May 16-18, 1994. Proceedings, Quebec, Canadian Climate Program Board, 1994, p.75-105, Refs. p.90-97.

Climatology, Geophysical surveys, Snow surveys, Ice reporting, Snow cover distribution, Sea ice distribution, Glacier surveys, Permafrost distribution, Ice surveys, Remote sensing, Canada

50-3416

Ice-based altitude distribution of natural radiation annual exposure rate in the Antarctica zone over the latitude range 69S-77S using a pair-filter thermoluminescence method.

Nakajima, T., Kamiyama, T., Fujii, Y., Motoyama, H., Esumi, S., *Applied radiation and isotopes,* Dec. 1995, 46(12), p.1363-1368, 9 refs.

Radiation, Ice sheets, Indicating instruments, Measuring instruments

Both ice-based altitude distributions of natural ionizing radiation exposure and the quasi-effective energy of natural radiation over Antarctica over the latitude range 69-77°S during approx. 500 days were measured using thermoluminescence dosimeters. The results show that dependence on altitude above sea level of the exposure rate increases by almost three-fold with each 2000 m increase in altitude, thus deviating from the general rule stating that the exposure rate should double with each 2000 m. Although the exposure rate shows a dependence on altitude, altitude dependence of the quasi-effective energy of natural radiation over Antarctica was not observed. It was observed that natural radiation occurring over the ice base of Antarctica consists mainly of cosmic rays. (Auth.)

50-3417

Interaction between sea ice of the Antarctic and Arctic.

Xie, S.M., Bao, C.G., Hao, C.J., *Chinese science bulletin,* Oct. 1995, 40(20), p.1713-1718, 7 refs.

Sea ice distribution, Ice models, Antarctica—Ross Sea, Antarctica—Weddell Sea

Sea ice of the Antarctic and Arctic comprises two huge heat sinks of a global atmosphere-ocean thermal engine which has a significant effect on global atmospheric circulation and climate. Most prior studies on sea ice of the two polar regions and their relationships to atmospheric circulation have been limited to sea ice variations at polar latitudes and their effects on climate. This note takes a comprehensive research view of the ice on a global scale, seeking to learn the impact each has on the other and on the global climate changes. SIGRID sea ice data provided by the Navy-NOAA Joint Ice Center (JIC) are used to calculate monthly mean net sea ice area indexes and their anomaly values of the antarctic sea ice in 1973-1989 and the arctic sea ice in 1972-1989.

50-3418

Report on acidification in the arctic countries: man-made acidification in a world of natural extremes.

Nenonen, M., *University of Lapland, Rovaniemi, Finland. Arctic Centre. Publications,* 1991, No.2, p.7-81, Refs. p.74-81.

DLC QH84.1.S73 1991

Air pollution, Chemical properties, Atmospheric composition, Polar atmospheres, Ecosystems, Environmental impact, Water pollution, Water chemistry, Leaching, Lichens, Forest land, Ground water, Soil pollution, Haze, Russia—Kola Peninsula

50-3419

Report on heavy metals.
Mel'nikov, S.A., *University of Lapland, Rovaniemi, Finland. Arctic Centre. Publications,* 1991, No.2, p.82-153, Refs. p.116-119.
DLC QH84.1.S73 1991
Air pollution, Chemical properties, Atmospheric composition, Polar atmospheres, Ecosystems, Environmental impact, Water pollution, Water chemistry, Ecology, Snow cover, Snow impurities, Glacier ice, Impurities, Bottom sediment, Aerosols, Russia—Kola Peninsula, Greenland, Norway—Spitsbergen, United States—Alaska, Russia—Novaya Zemlya, Sweden, Canada—Northwest Territories, CIS—Aral Sea, Russia—Kara Sea, Russia—Laptev Sea, Chukchi Sea, Norwegian Sea, Russia—East Siberian Sea, Arctic Ocean, Finland, Barents Sea

50-3420

Report on underwater noise.
Davis, R.A., Richardson, W.J., Thiele, L., Dietz, R., Johansen, P., *University of Lapland, Rovaniemi, Finland. Arctic Centre. Publications,* 1991, No.2, p.154-269, Refs. p.249-269.
DLC QH84.1.S73 1991
Ice cover effect, Underwater acoustics, Sound transmission, Propagation, Noise (sound), Ships, Ice navigation, Offshore drilling, Environmental impact

50-3421

Report on oil pollution.
Futsaeter, G., et al, *University of Lapland, Rovaniemi, Finland. Arctic Centre. Publications,* 1991, No.2, p.270-334, Refs. p.328-334.
DLC QH84.1.S73 1991
Marine biology, Ecosystems, Ecology, Oil spills, Water pollution, Hydrocarbons, Sediments, Environmental impact, Countermeasures, Sea ice distribution, Ice cover effect, Algae, Plankton, Marine transportation, Russia—Kara Sea, Russia—Laptev Sea, Russia—East Siberian Sea, Chukchi Sea, Beaufort Sea

50-3422

Report on organochlorines.
Jensen, J., *University of Lapland, Rovaniemi, Finland. Arctic Centre. Publications,* 1991, No.2, p.335-384, Refs. p.376-384.
DLC QH84.1.S73 1991
Ecosystems, Ecology, Water pollution, Environmental impact, Marine biology

50-3423

Report on radioactivity in the Arctic region.
Paakkola, O., *University of Lapland, Rovaniemi, Finland. Arctic Centre. Publications,* 1991, No.2, p.385-405, Refs. p.401-405.
DLC QH84.1.S73 1991
Radioactivity, Fallout, Aerosols, Pollution, Environmental impact, International cooperation, Accidents

50-3424

Snow cover in the Siberian forest-steppe.
Zykov, I.V., [1965], 20p., Unpublished translation. For Russian original see 3-2954.
Snow cover, Snow cover distribution, Snow density, Snow cover structure, Thawing, Snow melting, Forest land, Steppes, Russia—Siberia

50-3425

Observations of the snow cover in the southern part of the Buryat Autonomous Soviet Socialist Republic.
Nefed'eva, E.A., [1965], 16p., Unpublished translation. For Russian original see 15-18207. 6 refs.
Snow cover distribution, Snow depth, Snow melting, Thawing, Snow accumulation, Russia—Buryatya

50-3426

Representation of the distribution of the snow cover on the surface of the Earth's dry land.
Richter, G.D., Petrova, L.A., [1965], 6p., Unpublished translation. For Russian original see 23-1857.
Snow cover, Snow cover distribution, Snow cover stability

50-3427

Laws of distribution of the snow cover on the Greater Caucasus (Soviet Union).
Gurtovaia, E.E., Sulakvelidze, G.K., IAshina, A.V., [1965], 24p., Unpublished translation. For Russian original see 15-18205. 3 refs.
Snow cover distribution, Snow depth, Climatic factors, Topographic effects, Snow cover stability, Altitude, Snow accumulation, Snow density, Avalanches, Caucasus Mountains

50-3428

Background to the German expedition to Clearwater Fiord, Baffin Island, as part of the First International Polar Year 1882-83.
Barr, W., *Polar geography and geology,* Oct.-Dec. 1992, 16(4), p.265-271, 6 refs.
Expeditions, History, International cooperation, Canada—Northwest Territories—Baffin Island

50-3429

German expedition of the First International Polar Year to Cumberland Sound, Baffin Island, 1882-83.
Abbes, H., *Polar geography and geology,* Oct.-Dec. 1992, 16(4), p.272-304, Translated from Globus, Vol.45. 1 ref.
Expeditions, History, Canada—Northwest Territories—Baffin Island

50-3430

O.YU. Shmidt's scientific ideas on the strategy of developing the Arctic.
Shevelev, M.I., *Polar geography and geology,* Oct.-Dec. 1992, 16(4), p.305-312, Translated from Izvestiia Rossiĭskoĭ akademii nauk: Seriia geograficheskaia, 1991, No.5.
History, Expeditions, Russia—Far North, Northern Sea Route

50-3431

Sixtieth birthday of Vladimir Mikhaylovich Kotlyakov.
Grosval'd, M.G., Dreĭer, N.N., *Polar geography and geology,* Oct.-Dec. 1992, 16(4), p.313-320, For Russian original with bibliography of 596 entries see 47-344.
Glaciology, History, Research projects

50-3432

Background to Aleksandr Vasil'yevich Kolchak's expedition to Bennett Island, 1903.
Barr, W., *Polar geography and geology,* July-Sep. 1992, 16(3), p.175-178, 8 refs.
Expeditions, History, Russia—Bennett Island

50-3433

Expedition to Bennett Island mounted by the Academy of Sciences, in search of Baron Toll, 1903.
Kolchak, A.V., *Polar geography and geology,* July-Sep. 1992, 16(3), p.179-206, Translated from the Russian Izvestiia Imperatorskoĭ Akademii Nauk, 20(5) and Izvestiia Imperatorskogo Russkogo geograficheskogo obshchestva, 42(2).
History, Expeditions, Russia—Bennett Island

50-3434

Experiment in compiling a review map of anthropogenic degradation of the high-latitude areas of Russia.
Serebriannyĭ, L.R., Khropov, A.G., Kuznetsov, M.P., Koriakin, V.S., *Polar geography and geology,* July-Sep. 1992, 16(3), p.207-216, Translated from Izvestiia Akademii Nauk: Seriia geograficheskaia, 1992, No.4. 8 refs.
Environmental impact, Mapping, Ecology, Russia—Siberia

50-3435

Peat formation in the tundra of the Amguema valley and the Anadyr' lowland.
Smirnov, I.P., *Polar geography and geology,* July-Sep. 1992, 16(3), p.217-225, Translated from Izvestiia Vsesoiuznogo geograficheskogo obshchestva, 1991, No.6. 20 refs.
Peat, Tundra soils, Tundra vegetation, Swamps, Russia—Amguema River, Russia—Anadyr' River, Chukotskiy Peninsula

50-3436

Recent fluctuations of glaciers in Kongsfjorden, Spitsbergen, Svalbard (79°N).
Lefauconnier, B., *Polar geography and geology,* July-Sep. 1992, 16(3), p.226-233, Translated from Inter-Nord, 1991, No.19. 16 refs.
Glacier oscillation, Glacier mass balance, Cirque glaciers, Glacier surveys, Climatic factors, Glacier flow, Glacier thickness, Norway—Spitsbergen

50-3437

Geomorphology of the South Kara shelf.
Musatov, E.E., Sokolov, G.N., *Polar geography and geology,* July-Sep. 1992, 16(3), p.234-242, Translated from Geomorfologiia, 1992, No.2. 36 refs.
Geomorphology, Bottom topography, Tectonics, Pleistocene, Russia—Kara Sea

50-3438

Research into the Hansbreen, a tidewater glacier in Spitsbergen.
Glazovskiĭ, A.F., Kolondra, L., Moskalevskiĭ, M.IU., IAniia, IA., *Polar geography and geology,* July-Sep. 1992, 16(3), p.243-252, For Russian original see 47-2805. 9 refs.
Glacier ablation, Glacier mass balance, Glacial hydrology, Geodetic surveys, Glacier beds, Norway—Spitsbergen

50-3439

Crustal structure of the Arctic Ocean.
Gramberg, I.S., Volk, V.E., Verba, V.V., Gubernov, A.P., Kiselev, IU.G., *Polar geography and geology,* July-Sep. 1992, 16(3), p.253-263, Translated from Sovetskaia geologiia, 1992, No.6. 16 refs.
Mapping, Earth crust, Geophysical surveys, Arctic Ocean

50-3440

Trends in the development of radiation-protective polymer composite materials. [Tendentsii razvitiia radiatsionno-zashchitnykh polimernykh kompozitsionnykh materialov]
Pavlenko, V.I., Efimov, A.I., Marakin, O.A., Shevtsov, I.P., Lazurik, V.T., *Izvestiia vysshikh uchebnykh zavedenii. Stroitel'stvo,* Nov. 1995, No.11, p.78-79, In Russian. 5 refs.
Polymers, Composite materials, Cold tolerance, Countermeasures, Protection, Radiation

50-3441

Calculating complex forms of pipeline icing. [Raschet slozhnykh vidov oledeneniia truboprovodov]
Popov, IU.A., Gusel'nikova, E.N., *Izvestiia vysshikh uchebnykh zavedenii. Stroitel'stvo,* Nov. 1995, No.11, p.106-110, In Russian. 4 refs.
Pipelines, Icing, Mathematical models, Computer programs, Thermal regime, Ice conditions

50-3442

Microclimate of agricultural buildings—1. [Mikroklimat sel'skokhoziaĭstvennykh zdaniĭ—1]
Bodrov, V.I., *Izvestiia vysshikh uchebnykh zavedenii. Stroitel'stvo,* Nov. 1995, No.11, p.118-122, In Russian. 5 refs.
Microclimatology, Snow cover effect, Analysis (mathematics), Indoor climates, Buildings, Residential buildings

50-3443

Differences in the reactivity of Type I polar stratospheric clouds depending on their phase.
Ravishankara, A.R., Hanson, D.R., *Journal of geophysical research,* Feb. 20, 1996, 101(D2), p.3885-3890, 50 refs.
Polar atmospheres, Climatology, Polar stratospheric clouds, Cloud physics, Cloud dissipation, Heterogeneous nucleation, Supercooled clouds, Aerosols, Simulation, Temperature effects
It has been suggested that some Type I polar stratospheric clouds (PSCs) are supercooled liquids containing sulfuric acid, water, and nitric acid. This paper shows that the activation of chlorine over supercooled liquids is comparable to that over solid Type I PSCs at the same temperature. Furthermore, at temperatures within a few degrees of the frost point, the reactions of $ClONO_2$ with HCl and H_2O would be faster if Type I PSCs were liquid solutions rather than solids. Thus chlorine can be rapidly activated without the formation of solid Type I PSCs. (Auth. mod.)

50-3444

Volcanic perturbation of the atmosphere in both polar regions: 1991-1994.

Herber, A., Thomason, L.W., Dethloff, K., Viterbo, P., Radionov, V.F., Leiterer, U., *Journal of geophysical research,* Feb. 20, 1996, 101(D2), p.3921-3928, 52 refs.

Polar atmospheres, Aerosols, Particle size distribution, Volcanic ash, Atmospheric density, Optical properties, Turbidity, Seasonal variations, Photometry, Climatic factors, Antarctica—Georg Forster Station, Antarctica—Mirnyy Station, Antarctica—Georg von Neumayer Station, Norway—Spitsbergen

Long-term measurements by sunphotometers of the spectral dependence of aerosol optical depth are reported for several sites in the Arctic and Antarctic for the period Jan. 1991 through Dec. 1994. In the Antarctic a pronounced increase of atmospheric turbidity was observed at the end of Sep. 1991. The observed wavelength dependence in aerosol optical depth indicated that the increase was due to the presence of fresh and therefore small stratospheric aerosol particles associated with the eruption of Cerro Hudson in Aug. 1991. A significant decrease of the perturbation by Mount Pinatubo aerosol was observed in both polar regions by the end of 1994. The measured 1.0-μm aerosol optical depths at this time were only ≈0.04; these values exceed the background level by about 0.01-0.02. Therefore the aerosol optical depth values are still slightly higher than during undisturbed conditions. In addition, the occurrence of volcanic aerosols caused changes in the spectral dependence of the aerosol optical depth in the Arctic and Antarctic. These variations, including the changes in the aerosol size distribution as derived from the aerosol optical depth. are discussed in comparison to undisturbed conditions. (Auth. mod.)

50-3445

Assessment of TOVS-derived stratospheric temperatures up to 10 hPa for episodes of the European Arctic Stratospheric Ozone Experiment campaign.

Claud, C., Ovarlez, J., Scott, N.A., *Journal of geophysical research,* Feb. 20, 1996, 101(D2), p.3941-3956, 24 refs.

Polar atmospheres, Climatology, Air temperature, Stratosphere, Temperature measurement, Radio echo soundings, Profiles, Radiometry, Spacecraft

50-3446

Natural and anthropogenic changes in atmospheric CO_2 over the last 1000 years from air in antarctic ice and firn.

Etheridge, D.M., Steele, L.P., Langenfelds, R.L., Francey, R.J., Barnola, J.M., Morgan, V.I., *Journal of geophysical research,* Feb. 20, 1996, 101(D2), p.4115-4128, 61 refs.

Climatology, Atmospheric composition, Ice sheets, Ice cores, Firn, Sampling, Carbon dioxide, Snow air interface, Vapor diffusion, Bubbles, Periodic variations, Correlation, Antarctica—Law Dome

A record of atmospheric CO_2 mixing ratios from 1006 to 1978 A.D. has been produced by analyzing the air enclosed in three ice cores from Law Dome. The enclosed air has unparalleled age resolution and extends into recent decades, because of the high rate of snow accumulation at the ice core sites. The CO_2 data overlap with the record from direct atmospheric measurements for up to 20 years. The effects of diffusion in the firn on the CO_2 mixing ratio and age of the ice core air were determined by analyzing air sampled from the surface down to the bubble close-off depth. The uncertainty of the ice core CO_2 mixing ratios is 1.2 ppm (1 σ). Major CO_2 growth occurred over the industrial period except during 1935-1945 when CO_2 mixing ratios stabilized or decreased slightly, probably as a result of natural variations of the carbon cycle on a decadal time scale. (Auth. mod.)

50-3447

Light carboxylic acids in Greenland ice: a record of past forest fires and vegetation emissions from the boreal zone.

Legrand, M., De Angelis, M., *Journal of geophysical research,* Feb. 20, 1996, 101(D2), p.4129-4145, 44 refs.

Climatology, Precipitation (meteorology), Forest fires, Aerosols, Sedimentation, Biomass, Hydrocarbons, Ice sheets, Ice cores, Snow composition, Sampling, Profiles, Ion density (concentration), Correlation, Greenland—Summit

50-3448

High-resolution ammonium ice core record covering a complete glacial-interglacial cycle.

Fuhrer, K., Neftel, A., Anklin, M., Staffelbach, T., Legrand, M., *Journal of geophysical research,* Feb. 20, 1996, 101(D2), p.4147-4164, Refs. p.4162-4164.

Paleoclimatology, Aerosols, Atmospheric composition, Biomass, Ice sheets, Ice cores, Impurities, Sampling, Snow composition, Geochemical cycles, Vegetation factors, Greenland—Summit

50-3449

Origin of tropospheric ozone at remote high northern latitudes in summer.

Mauzerall, D.L., et al, *Journal of geophysical research,* Feb. 20, 1996, 101(D2), p.4175-4188, Refs. p.4186-4188.

Climatology, Atmospheric boundary layer, Atmospheric composition, Subpolar regions, Ozone, Sampling, Photochemical reactions, Aerosols, Turbulent diffusion, Climatic factors

50-3450

Rheology of water ices V and VI.

Durham, W.B., Stern, L.A., Kirby, S.H., *Journal of geophysical research,* Feb. 10, 1996, 101(B2), p.2989-3001, 25 refs.

Ice mechanics, High pressure ice, High pressure tests, Ice strength, Extraterrestrial ice, Ice deformation, Viscosity, Replicas, Scanning electron microscopy, Phase transformations, Simulation, Rheology

50-3451

Evaluation of surface radiative flux parameterizations for use in sea ice models.

Key, J.R., Silcox, R.A., Stone, R.S., *Journal of geophysical research,* Feb. 15, 1996, 101(C2), p.3839-3849, 50 refs.

Sea ice, Climatology, Ice cover effect, Ice models, Radiance, Radiation balance, Thermal radiation, Thermodynamics, Mathematical models, Climatic factors

50-3452

Distribution of hydrogen peroxide in surface snow over antarctic ice sheet.

Kamiyama, K., Motoyama, H., Fujii, Y., Watanabe, O., *Atmospheric environment,* Mar. 1996, 30(6), p.967-972, 10 refs.

Snow cover, Climatology, Ice sheets, Sampling, Snow composition, Impurities, Aerosols, Atmospheric composition, Ice vapor interface, Snow air interface, Correlation, Seasonal variations, Antarctica—Queen Maud Land

The concentration of hydrogen peroxide (H_2O_2) in surface snow samples obtained in East Queen Maud Land from summer 1991 to late summer 1993 is discussed. Surface snow samples were obtained in various locations and seasons during five traverses with snow vehicles. Gradual distributions were observed, depending upon the season and the location. The concentration of H_2O_2 is higher in summer than in winter, and is also higher in the inland region at higher altitude than in the coastal region at lower altitude. A sudden increase in early summer snow was observed, suggesting the sudden change in atmospheric environments affecting the concentration of H_2O_2 in the snow. (Auth. mod.)

50-3453

Early biochemical changes during acclimation of poplar to low temperature.

Jouve, L., Fouché, J.G., Gaspar, T., *Journal of plant physiology,* Nov. 1995, 147(2), p.247-250, 22 refs.

Plant physiology, Trees (plants), Plant tissues, Acclimatization, Cold weather tests, Frost resistance, Cold tolerance, Temperature effects

50-3454

New deicing tactics: prewet with salt brine. *Better roads,* Mar. 1996, 66(3), p.32-33.

Road icing, Winter maintenance, Ice control, Ice melting, Salting, Wettability, Brines, Cold weather performance

50-3455

Hearing on arctic coastal plain leasing. First session on leasing of the 1002 area of the Arctic National Wildlife Refuge (ANWR) to the oil exploration and development industry, Aug. 3, 1995.

U.S. Congress. House. Committee on Resources, Washington, D.C., U.S. Government Printing Office, 1993, 252p., Serial No.104-33.

Arctic landscapes, Petroleum industry, Mining, Exploration, Economic analysis, Environmental impact, Environmental protection, Legislation, United States—Alaska

50-3456

Freezing purification system and method for decontamination and desalination of water.

Husseiny, A.A., Lundstrom, J.E., *U.S. Patent Office. Patent,* Mar. 28, 1995, n.p., USP-5,400,619, 4 refs.

Desalting, Water treatment, Freezing, Water pollution, Heat transfer

50-3457

Method for seismic exploration in arctic regions.

Barr, F.J., Sitton, G.A., Nyland, D.L., *U.S. Patent Office. Patent,* Apr. 18, 1995, n.p., USP-5,408,441, 14 refs.

Seismic surveys, Seismic reflection, Seismic refraction, Ice cover effect, Noise (sound), Cold weather operation

50-3458

Self-contained anti-skid device for pneumatic tires.

Yadegar, I., *U.S. Patent Office. Patent,* May 2, 1995, n.p., USP-5,411,070, 12 refs.

Tires, Skid resistance, Traction, Valves, Design, Cold weather performance

50-3459

Deicing device for cable.

LaForte, J.L., Allaire, M.A., Farzaneh, M., *U.S. Patent Office. Patent,* May 2, 1995, n.p., USP-5,411,121, 16 refs.

Ice removal, Power lines, Transmission lines, Electromagnetic properties

50-3460

Wheels that provide lateral friction on ice.

Alderman, R.L., Hue, D.C., *U.S. Patent Office. Patent,* May 2, 1995, n.p., USP-5,411,320, 6 refs.

Vehicle wheels, Skid resistance, Equipment, Design, Ice friction, Cold weather performance

50-3461

Method and system for detecting potential icy conditions on roads.

Rendon, E., *U.S. Patent Office. Patent,* May 16, 1995, n.p., USP-5,416,476, 8 refs.

Road icing, Ice detection, Design, Infrared equipment, Measuring instruments, Surface temperature, Warning systems, Vehicles

50-3462

Apparatus and method for powered thermal friction adjustment.

Tabar, W.J., *U.S. Patent Office. Patent,* Aug. 15, 1995, n.p., USP-5,441,305, 7 refs.

Heating, Metal snow friction, Metal ice friction, Plastics snow friction, Electric power, Design, Equipment, Skis

50-3463

Anti-icing system for a gas turbine engine.

Mouton, P.C., *U.S. Patent Office. Patent,* June 13, 1995, n.p., USP-5,423,174, 17 refs.

Engines, Ice prevention, Ice removal, Countermeasures, Heat transfer, Design, Pumps

50-3464

Method of and apparatus for removing debris from the floptical medium.

Johnson, P.R., et al, *U.S. Patent Office. Patent,* May 30, 1995, n.p., USP-5,419,733, 16 refs.

Lasers, Ice crystals, Equipment, Design

50-3465

Asphaltic compositions and uses therefor.
Long, H.W., *U.S. Patent Office. Patent,* Aug. 15, 1995, n.p., USP-5,441,360, 10 refs.
Bitumens, Concrete aggregates, Concrete admixtures, Pavements, Cold weather performance, Winter concreting, Ice removal, Microwaves

50-3466

Ventilated cap system for the ridge of a roof.
Sells, G.L., *U.S. Patent Office. Patent,* June 27, 1995, n.p., USP-5,427,571, 6 refs.
Roofs, Cold weather performance, Thermal expansion, Design, Equipment

50-3467

Artificial snow in an aggregate form of snow granules.
Miura, Y., Hirano, K., Nate, T., Kambayashi, T., Ohtsuka, M., Nagai, T., *U.S. Patent Office. Patent,* July 25, 1995, n.p., USP-5,436,039, 31 refs.
Artificial snow, Polymers, Design

50-3468

Process and product for removing ice or snow from a traffic surface.
Dieupart, F., *U.S. Patent Office. Patent,* July 4, 1995, n.p., USP-5,429,763, 4 refs.
Ice removal, Snow removal, Pavements, Chemical ice prevention, Chemical composition, Cold weather performance

50-3469

Electro-impulse de-icer.
Adams, L.J., *U.S. Patent Office. Patent,* July 4, 1995, n.p., USP-5,429,327, 12 refs.
Ice removal, Aircraft icing, Design, Electric equipment

50-3470

Automobile traction enhancement device.
Morelli, R.L., *U.S. Patent Office. Patent,* Oct. 3, 1995, n.p., USP-5,454,413, 11 refs.
Tires, Traction, Design, Equipment, Cold weather operation

50-3471

Elastic wave sensing system.
Liu, Y., Lynnworth, L.C., *U.S. Patent Office. Patent,* Oct. 10, 1995, n.p., USP-5,456,114, 11 refs.
Elastic waves, Wave propagation, Aircraft icing, Sensors, Sound waves

50-3472

Detector for indicating ice formation on the wing of an aircraft.
Luukkala, M., *U.S. Patent Office. Patent,* Nov. 21, 1995, n.p., USP-5,467,944, 10 refs.
Aircraft icing, Ice detection, Design, Equipment, Ultrasonic tests, Cold weather operation

50-3473

System for recovery of oil from snow and ice surfaces.
Aiken, L.B., *U.S. Patent Office. Patent,* Nov. 28, 1995, n.p., USP-5,469,645, 9 refs.
Oil recovery, Cold weather operation, Vehicles, Tractors, Machinery, Design, Pumps, Impurities, Snow cover, Ground ice

50-3474

Snow guard.
Smeja, G.C., Smeja, M.V., *U.S. Patent Office. Patent,* Dec. 5, 1995, n.p., USP-5,471,799, 7 refs.
Roofs, Countermeasures, Equipment, Design, Snow retention

50-3475

Ice detection apparatus for transportation safety.
Stolarczyk, L.G., Stolarczyk, G.L., *U.S. Patent Office. Patent,* Dec. 12, 1995, n.p., USP-5,474,261, 8 refs.
Antennas, Design, Aircraft icing, Ice detection, Ice electrical properties, Equipment, Computer applications, Slush, Ice removal, Safety, Cold weather operation

50-3476

System for detecting ice or snow on surface which specularly reflects light.
Stern, H., *U.S. Patent Office. Patent,* Dec. 12, 1995, n.p., USP-5,475,370, 11 refs.
Ice detection, Aircraft icing, Ice dielectrics, Dielectric properties, Polarization (charge separation)

50-3477

Heated mat structure for melting ice and snow.
Dyer, C.W., *U.S. Patent Office. Patent,* Jan. 10, 1995, n.p., USP-5,380,988, 16 refs.
Electric equipment, Ice melting, Snow melting, Design

50-3478

Ice thickness measurement reflectometer.
Glynn, D.P., Joseph, J.C., Perkins, T.O., *U.S. Patent Office. Patent,* Jan. 17, 1995, n.p., USP-5,381,694, 3 refs.
Ice cover thickness, Ice electrical properties, Electromagnetic properties, Electromagnetic prospecting, Measuring instruments, Thickness gages

50-3479

Offshore structure and installation method.
Waddell, J.W., *U.S. Patent Office. Patent,* Jan. 24, 1995, n.p., USP-5,383,748, 16 refs.
Offshore structures, Cold weather operation, Ice solid interface, Ice loads, Sea ice, Pile structures

50-3480

Snow and ice removal apparatus.
Stanger, T.P., *U.S. Patent Office. Patent,* Feb. 7, 1995, n.p., USP-5,387,778, 8 refs.
Ice removal, Snow removal equipment, Design, Heating, Snow melting, Ice melting

50-3481

Ice dam melting system.
Tourangeau, D.R., Csizmazia, J., *U.S. Patent Office. Patent,* Feb. 21, 1995, n.p., USP-5,391,858, 18 refs.
Ice dams, Ice melting, Roofs, Equipment, Design, Heating

50-3482

Apparatus for measuring ice distribution profiles.
Gerardi, J.J., Hickman, G.A., Khatkhate, A.A., Pruzan, D.A., *U.S. Patent Office. Patent,* Mar. 21, 1995, n.p., USP-5,398,547, 27 refs.
Sensors, Design, Ice detection, Aircraft icing, Measuring instruments, Ice cover thickness, Thickness gages

50-3483

Method and apparatus for remote detection and thickness measurement of ice or liquid layer.
Gagnon, R.E., *U.S. Patent Office. Patent,* Mar. 21, 1995, n.p., USP-5,400,144, 3 refs.
Remote sensing, Ice detection, Ice cover thickness, Aircraft icing, Measuring instruments, Refraction, Liquid solid interfaces

50-3484

Lightweight gas concrete.
Hama, Y., Kimura, K., Hanada, S., Watanabe, T., Tabata, M., *World Intellectual Property Organization. Patent Cooperation Treaty. Patent,* July 8, 1993, 14p., No.9313032, In Japanese with English summary.
Cellular concretes, Lightweight concretes, Concrete admixtures, Concrete freezing, Winter concreting, Concrete curing, Concrete durability, Frost resistance, Frost protection

50-3485

Rubber composition.
Takao, H., Yoshida, N., Imai, A., Tsuji, M., Saito, Y., *World Intellectual Property Organization. Patent Cooperation Treaty. Patent,* 1987, 23p., No.8706250, In Japanese with English summary.
Tires, Rubber, Rubber ice friction, Skid resistance

50-3486

Pneumatic tire with improved drivability on icy roads.
Harada, M., Midorikawa, S., *Japan Patent Office. Patent,* June 15, 1993, n.p., No.93148390, Citation only, no abstract.
Tires, Rubber, Rubber ice friction, Skid resistance, Traction

50-3487

Blow molding process for moldings with foam cores.
Hatakeyama, Y., *Japan Patent Office. Patent,* June 8, 1993, n.p., No.93138722, Citation only, no abstract.
Cellular plastics, Thermal insulation

50-3488

Degradation of glaciation and runoff fluctuations in the upper Naryn River. [Degradatsiia oledeneniia i kolebaniia stoka v verkhov'iakh r. Naryn]
Diurgerov, M.B., Ratsek, I.V., *Rossiiskaia akademiia nauk. Izvestiia. Seriia geograficheskaia,* May-June 1994, No.3, p.104-112, In Russian. 16 refs.
Runoff, Glacier melting, Glacial rivers, Glacier ablation, Glacier alimentation, CIS—Naryn River

50-3489

Building a glaciological information system for a surging glacier. [Sozdanie gliatsiologicheskoĭ informatsionnoĭ sistemy pul'siruiushchego lednika]
Garelik, I.S., Kotliakov, V.M., Osipova, G.B., Tsvetkov, D.G., *Rossiiskaia akademiia nauk. Izvestiia. Seriia geograficheskaia,* May-June 1994, No.3, p.125-137, In Russian with English summary. 9 refs.
Data processing, Glacier surges, Geodesy, Glacier oscillation, Glacier alimentation, Forecasting, Pamirs

50-3490

Ice shelf breakup.
Fahnestock, M., *Science,* Feb. 9, 1996, 271(5250), p.775-776, 8 refs.
Ice shelves, Ice breakup, Glacier ice, Ice mechanics, Air temperature, Climatic changes, Antarctica—Antarctic Peninsula

Commenting on the recent breakup of several ice shelves on the Antarctic Peninsula, the author provides a perspective on these events and "amplifies some of the possible implications for understanding the origin and dynamics of the larger ice shelves".

50-3491

End of the game. *Economist,* Jan. 20, 1996, p.84.
Research projects, Stations, Cold weather operation, Economic analysis, International cooperation, Norway—Spitsbergen

50-3492

Spring snowpack anomaly patterns and winter climatic variability, British Columbia, Canada.
Moore, R.D., McKendry, I.G., *Water resources research,* Mar. 1996, 32(3), p.623-632, 30 refs.
Snow hydrology, Snow surveys, Climatic changes, Synoptic meteorology, Atmospheric circulation, Snow accumulation, Snow water equivalent, Snow cover stability, Snow air interface, Snow courses, Long range forecasting, Canada—British Columbia

50-3493

Sensitivity of ERS-1 and JERS-1 radar data to biomass and stand structure in Alaskan boreal forest.
Harrell, P.A., Bourgeau-Chavez, L.L., Kasischke, E.S., French, N.H.F., Christensen, N.L., Jr., *Remote sensing of environment,* Dec. 1995, 54(3), p.247-260, 52 refs.
Forest ecosystems, Forest canopy, Biomass, Revegetation, Discontinuous permafrost, Spaceborne photography, Synthetic aperture radar, Backscattering, Classifications, Snow cover effect, United States—Alaska

50-3494
Improved fuzzy logic segmentation of sea ice, clouds and ocean in remotely sensed arctic imagery.
Simpson, J.J., Keller, R.H., *Remote sensing of environment,* Dec. 1995, 54(3), p.290-312, 44 refs.
Oceanography, Remote sensing, Polar atmospheres, Sea ice distribution, Ice detection, Image processing, Classifications, Spaceborne photography, Radiometry, Cloud cover, Resolution, Analysis (mathematics), Arctic Ocean

50-3495
Indiana streamlines permitting and ice/snow removal.
Pittman, R., *Public works,* Feb. 1996, 127(2), p.49-50.
Road maintenance, Winter maintenance, Snow removal, Ice control, Mapping, Route surveys, Logistics, Computerized simulation, Cost analysis, Urban planning, United States—Indiana

50-3496
Aircraft operation for earth science study in the Yamato Mountains by JARE 35.
Funaki, M., *Polar news,* Aug. 1995, No.61, p.16-20, In Japanese.
Logistics, Airplanes, Ice runways, Cold weather operation, Cost analysis, Antarctica—Showa Station, Antarctica—Queen Fabiola Mountains
Although the title implies a scientific study, this article is mainly a narrative account of the support of ground teams in the Yamato Mountains (the Japanese name, officially called Queen Fabiola Mountains) by two aircraft, a Cessna and a Pilatus, from Showa Station during the 35th Japanese Antarctic Research Expedition. There were 12 flights each, Sep.-Dec. 1994. The cost was ¥3,150,000 for the Cessna (¥70,000/hr x 3.75 hrs per flight x 12 flights) plus ¥3,360,000 for the Pilatus (¥80,000/hr x 3.5 hrs per flight x 12 flights) plus ¥195,300 consumption tax for a total of ¥6,705,300. A sketch map is included showing the landing site on the bare ice.

50-3497
Dome-Fuji deep drilling facility, JARE 35.
Saito, T., *Polar news,* Aug. 1995, No.61, p.21-27, In Japanese.
Stations, Logistics, Cold weather construction, Ice cores, Drilling, Coring
The construction of Dome Fuji (abbreviated Dome F) Station at 77°18'S, 39°41'E, 3810 m a.s.l., completed in Nov. 1994 by a nine-man crew of the 35th Japanese Antarctic Research Expedition, is described. The station consists of a separate workshop and a living area connected by an undersnow passage to a work area. The living area includes a mess hall, observation hut, infirmary, living quarters with six rooms, a generator hut with two 24-kVA generators, and a fuel store. The work area consists of the drilling site, i.e. a trench dug in the snow 4 m deep, 4 m wide and 22 m long housing the borehole, with two access trenches and a drill workshop. Sketch plans showing the layout and dimensions are included.

50-3498
Lake Vostok beneath the antarctic ice sheet—a Russian research proposal.
Kaminuma, K., *Polar news,* Mar. 1995, No.60, p.36-40, In Japanese.
Glacial lakes, Glacier beds, Glacial hydrology, Subglacial drainage, Subglacial observations, Ice cores, Bottom topography, Seismic surveys, Radio echo soundings, Antarctica—Vostok Station
A large subglacial lake, tentatively named Lake Vostok, has been detected beneath the ice sheet at Vostok Station by seismic and radar altimetry soundings. The lake is oval shaped, about 250 km long by 40 km wide with an area of about 10,000 km^2 and a depth of 400 m. The ice sheet at Vostok Station has a surface elevation of about 3500 m and a thickness of 3800 m. The interface of the bottom surface of the ice sheet and top surface of the subglacial lake is therefore 300 m below sea level and the bottom of the lake is 700 m below sea level. An ice core drilling project at Vostok was suspended in 1994 at a depth of 2700 m, 1100 m above the lake, due to lack of supplies. Two Russian scientists, A.P. Kapitsa, the first to report the existence of the lake, and I.A. Zotikov, who has been an exchange scientist to Japan, have urged the resumption of the ice core drilling so that eventually the lake water can be sampled to determine if the lake was formed by pressure melting or by geothermal melting under the ice sheet, and if there is any life in the lake.

50-3499
Relocation of telecommunication facilities at Syowa Station.
Takada, K., *Polar news,* Mar. 1995, No.60, p.49-52, In Japanese.
Stations, Buildings, Radio communication, Telecommunication, Data transmission, Antennas, Electric equipment, Electronic equipment, Logistics, Antarctica—Showa Station
The relocation, completed in Jan. 1995, of telecommunication facilities at Showa Station, is described. The relocation included installation of VHF/UHF transceivers, an air control console, a telecommunications console, and INMARSAT (International Maritime Satellite) equipment in the communications room of the new three-story administration building, and installation of antennas and cable hookups outside. A sketch floor plan of the communications room is included.

50-3500
Effects of contour-line strip-cutting of trees on snowmelt runoff.
Shimizu, T., Yoshino, S., *Seppyo,* Jan. 1996, 58(1), p.3-10, In Japanese with English summary. 21 refs.
Snow hydrology, Snowmelt, Snow retention, Runoff, Forest land, Vegetation factors, Japan

50-3501
Albedo of forest with crown snow.
Yamazaki, T., Fukabori, K., Kondo, J., *Seppyo,* Jan. 1996, 58(1), p.11-18, In Japanese with English summary. 7 refs.
Snow optics, Snowfall, Snow cover effect, Forest canopy, Interception, Albedo

50-3502
Formation of ice film at the surface of compacted snow on roads.
Matsuzawa, M., Ishimoto, K., Maeno, N., *Seppyo,* Jan. 1996, 58(1), p.19-28, In Japanese with English summary. 9 refs.
Road icing, Snow ice interface, Snow compaction, Snow crust, Safety

50-3503
Development of a new shallow ice core drill.
Takahashi, A., *Seppyo,* Jan. 1996, 58(1), p.29-37, In Japanese. 14 refs.
Ice coring drills, Ice cores, Coring, Drilling

50-3504
Dielectric measurement of snow by means of parallel line capacitor.
Takei, I., *Seppyo,* Jan. 1996, 58(1), p.39-42, In Japanese with English summary. 3 refs.
Snow cover structure, Snow density, Metamorphism (snow), Snow electrical properties, Ice dielectrics

50-3505
Recent glacier variations in the Patagonia icefield.
Aniya, M., Sato, H., *Seppyo,* Jan. 1996, 58(1), p.43-52, In Japanese. 41 refs. of which 33 are English.
Mountain glaciers, Glacier surveys, Glacier oscillation, Patagonia

50-3506
Recent studies on snow and ice using microwave remote sensing—sea ice observations by passive microwave radiometer.
Enomoto, H., *Seppyo,* Jan. 1996, 58(1), p.53-55, In Japanese. 13 refs.
Ice surveys, Sea ice distribution, Ice conditions, Ice reporting, Radio echo soundings, Radiometry, Spaceborne photography

50-3507
Japanese glaciological environmental studies in the arctic cryosphere.
Watanabe, O., *Seppyo,* Nov. 1995, 57(4), p.331-338, In Japanese. 11 refs.
Expeditions, Glacier surveys, Glacial meteorology, Ice cores, Ice composition, Firn stratification, Paleoclimatology, Norway—Svalbard, Greenland

50-3508
Maximum flow rate of floating snow in an open channel.
Fukushima, Y., *Seppyo,* Nov. 1995, 57(4), p.339-348, In Japanese with English summary. 11 refs.
Snow removal, Drains, Channels (waterways), Water flow, Ice water interface, Mathematical models

50-3509
Characteristics of the aggregation of needle snow crystals.
Kajikawa, M., *Seppyo,* Nov. 1995, 57(4), p.349-355, In Japanese with English summary. 13 refs.
Snowflakes, Snow crystal growth, Snow crystal structure, Ice needles, Ice crystal adhesion, Ice crystal collision, Coalescence

50-3510
Technical development of snow removal and ice control machine.
Kuriyama, H., *Seppyo,* Nov. 1995, 57(4), p.357-367, In Japanese. 24 refs.
Snow removal equipment, Motor vehicles, Road maintenance

50-3511
Recent studies on snow and ice using microwave remote sensing—dielectric properties of snow and ice at microwave frequencies.
Matsuoka, T., Fujita, S., Mae, S., *Seppyo,* Nov. 1995, 57(4), p.368-370, In Japanese. 12 refs.
Ice surveys, Glacier surveys, Snow ice interface, Ice dielectrics, Radio echo soundings, Synthetic aperture radar, Spaceborne photography

50-3512
Road surface covered with snow and ice and traffic accidents in Hokkaido.
Takagi, H., *Seppyo,* Nov. 1995, 57(4), p.371-378, In Japanese. 3 refs.
Road icing, Tires, Rubber ice friction, Skid resistance, Safety, Accidents, Road maintenance, Highway planning, Japan—Hokkaido

50-3513
History of snow tire.
Aoi, H., *Seppyo,* Nov. 1995, 57(4), p.379-383, In Japanese. 3 refs.
Tires, Rubber, Rubber ice friction, Skid resistance, Japan

50-3514
Friction of rubber at low temperature.
Uchiyama, Y., Kanai, T., *Seppyo,* Nov. 1995, 57(4), p.384-389, In Japanese with English captions. 7 refs.
Tires, Rubber, Rubber ice friction, Skid resistance

50-3515
Material characteristics of studless tire.
Hirata, Y., *Seppyo,* Nov. 1995, 57(4), p.390-395, In Japanese. 4 refs.
Tires, Rubber, Rubber ice friction, Skid resistance

50-3516
Development of ski manufacturing technology as seen in the patents. [Tokkyo kara mita suki-ban seizo gijutsu no hattatsu]
Shimada, T., *Seppyo,* Nov. 1995, 57(4), p.403-408, In Japanese. 15 refs.
Skis, Plastics snow friction, Plastics ice friction, Plastics, Composite materials, Manufacturing, Plastics snow friction

50-3517
Heat pipe science and technology. Chapter 5. Continuum transient and frozen startup behaviour of heat pipes.
Faghri, A., Washington, D.C., Taylor & Francis, 1995, 874p. (Pertinent p.267-340), Numerous refs. passim including 35 refs. in the pertinent chapter.
DLC TJ264.F34 1995
Heat pipes, Heat transfer, Phase transformations, Low temperature research, Mathematical models

50-3518
Mountainous meteorology, climatology and aerology of the lower layers of troposphere; Proceedings of the International Conference, Stará Lesná, 26-30 August 1991.
Panenka, I., ed, Bratislava, Slovak Hydrometeorological Institute, 1991, 328p., In English or Russian with summaries in English, German, Hungarian, Russian, Czech. Refs. passim. For selected papers see 50-3519 through 50-3523.
DLC QC993.6.M68 1991
Mountain glaciers, Ice cover, Snow depth, Fog, Air temperature

50-3519

Glacier mass balance investigations in Sonnblick region, Austria.

Böhm, R., Hammer, N., Mountainous meteorology, climatology and aerology of the lower layers of troposphere; Proceedings of the International Conference, Stará Lesná, 26-30 August 1991. Edited by I. Panenka, Bratislava, Slovak Hydrometeorological Institute, 1991, p.49-54, With German and Russian summaries. 4 refs.

DLC QC993.6.M68 1991

Glacier mass balance, Glacier oscillation, Glacier ablation, Austria—Sonnblick

50-3520

Special problems of the precipitation conditions evaluation in mountainous areas of Slovakia.

Lapin, M., Faško, P., Košťálová, J., Mountainous meteorology, climatology and aerology of the lower layers of troposphere; Proceedings of the International Conference, Stará Lesná, 26-30 August 1991. Edited by I. Panenka, Bratislava, Slovak Hydrometeorological Institute, 1991, p.83-89, With Czech and Russian summaries. 2 refs.

DLC QC993.6.M68 1991

Precipitation (meteorology), Precipitation gages, Snow depth, Snow cover, Slovakia

50-3521

Characteristics of winters in a high mountain region climate in a period of new climatic norms. [Kharakter zim vysokogornogo klimata v periode novoĭ klimaticheskoĭ normy]

Kveták, S., Košťálová, J., Mountainous meteorology, climatology and aerology of the lower layers of troposphere; Proceedings of the International Conference, Stará Lesná, 26-30 August 1991. Edited by I. Panenka, Bratislava, Slovak Hydrometeorological Institute, 1991, p.136-143, In Russian with Czech and English summaries. 2 refs.

DLC QC993.6.M68 1991

Precipitation (meteorology), Temperature distribution, Air temperature, Snow depth, Snowfall, Mountains, Slovakia, Tatra Mountains

50-3522

Reflection of weather conditions in the chemism of horizontal fog/cloud precipitation in the region of mountainous forest.

Skvarenina, J., Minďáš, J., Mountainous meteorology, climatology and aerology of the lower layers of troposphere; Proceedings of the International Conference, Stará Lesná, 26-30 August 1991. Edited by I. Panenka, Bratislava, Slovak Hydrometeorological Institute, 1991, p.245-251, With Czech and Russian summaries. 4 refs.

DLC QC993.6.M68 1991

Precipitation (meteorology), Fog, Cloud cover, Snow composition, Ions, Forest ecosystems, Impurities, Snow water equivalent, Water pollution, Mountains, Wind direction, Slovakia

50-3523

Comparison of air temperature and humidity in standard and experimental shelters at Lomnický štít.

Gajar, B., Pindják, P., Mountainous meteorology, climatology and aerology of the lower layers of troposphere; Proceedings of the International Conference, Stará Lesná, 26-30 August 1991. Edited by I. Panenka, Bratislava, Slovak Hydrometeorological Institute, 1991, p.284-290, With Russian and Czech summaries. 5 refs.

DLC QC993.6.M68 1991

Humidity, Ice cover effect, Air temperature, Water vapor, Temperature measurement, Ice fog, Slovakia

50-3524

Year-round column ozone observations at 65°S: validation and polar winter data.

Jones, A.E., Roscoe, H.K., Sarkissian, A., Shanklin, J.D., Wolff, E.W., *Journal of quantitative spectroscopy & radiative transfer,* Sep. 1995, 54(3), p.481-494, 17 refs.

Ozone, Meteorological instruments, Meteorological data, Solar radiation, Measurement, Antarctica—Faraday Station

A SAOZ (System d'Analyse et d'Observations Zenithales) u.v.-visible spectrometer was installed at Faraday Station in 1990, with a view to gaining year-round measurements of column ozone. Observations have been validated by comparison with the Faraday Dobson. Agreement between the two instruments is good, with SAOZ measuring 3±2% lower than the Dobson over the comparison period. Both instruments show the same small-scale variation in column ozone. However, there is a notable seasonal signal in the ratio of (SAOZ column ozone)/(Dobson column ozone) which calls into question the validity of the SAOZ winter column ozone measurements made when the solar elevation is too low for making Dobson observations. The problem appears to lie with the calculated air-mass factors (AMFs) used in deriving vertical columns from the SAOZ slant columns. New SAOZ data were derived using empirical AMFs. The qualitative behavior of winter column ozone is the same for both sets of AMFs, showing an increase to mid-winter followed by a decrease to the spring minimum, although smaller mid-winter columns are calculated when using empirical AMFs minimum. (Auth.)

50-3525

Runoff index values for frozen soil areas of the Pacific Northwest.

McCool, D.K., Walter, M.T., King, L.G., *Journal of soil and water conservation,* Sep.-Oct. 1995, 50(5), p.466-469, 22 refs.

Runoff forecasting, Soil erosion, Precipitation (meteorology), Ground thawing, Plains, Runoff forecasting, Simulation, Indexes (ratios), Mathematical models, Soil conservation, Accuracy

50-3526

Scavenging of electrons and radicals in frozen chloride-alcohol glasses.

Kaleciński, J., *Radiation physics and chemistry,* Mar. 1996, 47(3), p.341-344, 9 refs.

Frozen liquids, Cryogenics, Solutions, Optical properties, Ice physics, Ice spectroscopy, Spectra, Radiation absorption, Scavenging, Photochemical reactions

50-3527

Reactivity of imidazoles in pulse and γ-irradiated liquid and frozen systems.

Kalecińska, E., Kaleciński, J., *Radiation physics and chemistry,* Mar. 1996, 47(3), p.345-348, 6 refs.

Frozen liquids, Solutions, Hydrocarbons, Gamma irradiation, Radiation absorption, Photochemical reactions, Ice spectroscopy, Spectra, Ice erosion, Scavenging, Ice physics

50-3528

Plankton dynamics in the marginal ice zone of the central Barents Sea during spring: carbon flow and structure of the grazer food chain.

Hansen, B., Christiansen, S., Pedersen, G., *Polar biology,* Feb. 1996, 16(2), p.115-128, 73 refs.

Oceanography, Marine biology, Surface waters, Ice edge, Sampling, Ice water interface, Ecosystems, Microbiology, Biomass, Plankton, Nutrient cycle, Ice cover effect, Barents Sea

50-3529

Effects of experimental temperature elevation on high-arctic soil microarthropod populations.

Coulson, S.J., et al, *Polar biology,* Feb. 1996, 16(2), p.147-153, 31 refs.

Climatology, Global warming, Tundra climate, Arctic landscapes, Ecosystems, Biomass, Soil microbiology, Soil temperature, Temperature variations, Environmental tests, Temperature effects, Simulation

50-3530

International high-latitude expedition in the Kara Sea (the 49th cruise of the R/V *Dmitriĭ Mendeleev*).

Lisitsyn, A.P., Vinogradov, M.E., *Oceanology,* Apr. 1995, 34(5), p.583-590, Translated from Okeanologiia. 2 refs.

Oceanographic surveys, Research projects, Oceanography, Sedimentation, Estuaries, Marine biology, Surface drainage, Runoff, Ecosystems, Russia—Kara Sea

50-3531

Influence of runoff from land on the distribution of hydrologic characteristics of the Kara Sea.

Burenkov, V.I., Vasil'kov, A.P., *Oceanology,* Apr. 1995, 34(5), p.591-599, Translated from Okeanologiia. 12 refs.

Oceanography, Hydrology, Salinity, Subpolar regions, Estuaries, Surface drainage, Runoff, Boundary layer, Turbulent exchange, Hydrogeochemistry, Profiles, Russia—Kara Sea

50-3532

Hydrochemical characteristics of the Kara Sea.

Makkaveev, P.N., Stunzhas, P.A., *Oceanology,* Apr. 1995, 34(5), p.600-605, Translated from Okeanologiia. 11 refs.

Oceanography, Water chemistry, Sampling, Hydrogeochemistry, Sedimentation, Suspended sediments, Estuaries, Turbulent exchange, Water transport, Nutrient cycle, Russia—Kara Sea

50-3533

Dissolved inorganic carbon in the Kara Sea and in the mouths of the Ob and Yenisey Rivers.

Makkaveev, P.N., *Oceanology,* Apr. 1995, 34(5), p.606-610, Translated from Okeanologiia. 11 refs.

Oceanography, Subpolar regions, Surface waters, Hydrogeochemistry, Solubility, Estuaries, Runoff, Turbulent exchange, Sampling, Carbon dioxide, Russia—Kara Sea

50-3534

Labile dissolved forms of heavy metals in the Kara Sea waters.

Kravtsov, V.A., Gordeev, V.V., Pashkina, V.I., *Oceanology,* Apr. 1995, 34(5), p.611-618, Translated from Okeanologiia. 18 refs.

Oceanography, Subpolar regions, Metals, Water pollution, Microelement content, Estuaries, Turbulent exchange, Solubility, Ion density (concentration), Sampling, Hydrogeochemistry, Environmental tests, Russia—Kara Sea

50-3535

Biogeochemical processes of sulfur turnover in the early stages of sediment diagenesis along the Yenisey River-Kara Sea section.

Lein, A.IU., et al, *Oceanology,* Apr. 1995, 34(5), p.619-629, Translated from Okeanologiia. 11 refs.

Oceanography, Estuaries, Subpolar regions, Boundary layer, Bottom sediment, Turbulent exchange, Hydrogeochemistry, Sedimentation, Diagenesis, Sampling, Geochemical cycles, Russia—Kara Sea

50-3536

Primary production and chlorophyll in the Kara Sea in September 1993.

Vedernikov, V.I., Demidov, A.B., Sud'bin, A.I., *Oceanology,* Apr. 1995, 34(5), p.630-640, Translated from Okeanologiia. 29 refs.

Oceanography, Estuaries, Marine biology, Plankton, Distribution, Biomass, Chlorophylls, Nutrient cycle, Sampling, Russia—Kara Sea

50-3537

Distribution of bacterioplankton in the Kara Sea in September 1993.

Mitskevich, I.N., Namsaraev, B.B., *Oceanology,* Apr. 1995, 34(5), p.641-645, Translated from Okeanologiia. 12 refs.

Oceanography, Subpolar regions, Marine biology, Microbiology, Plankton, Bacteria, Biomass, Statistical analysis, Sampling, Russia—Kara Sea

50-3538

Mesoplankton of the west Kara Sea and the Baidara Bay.

Vinogradov, M.E., Nikolaeva, G.G., Khoroshilov, V.S., Vinogradov, G.M., *Oceanology,* Apr. 1995, 34(5), p.646-652, Translated from Okeanologiia. 16 refs.

Oceanography, Marine biology, Microbiology, Plankton, Classifications, Biomass, Distribution, Sampling, Ecosystems, Russia—Kara Sea

50-3539

Mesoplankton in the east Kara Sea and the Ob and Yenisey River estuaries.

Vinogradov, M.E., Shushkina, E.A., Lebedeva, L.P., Gagarin, V.I., *Oceanology,* Apr. 1995, 34(5), p.653-660, Translated from Okeanologiia. 17 refs.

Oceanography, Marine biology, Estuaries, Nutrient cycle, Biomass, Plankton, Sampling, Distribution, Ecosystems, Russia—Kara Sea, Russia—Ob River

50-3540

Dynamic model of the pelagic ecosystem of the Kara Sea.

Lebedeva, L.P., Shushkina, E.A., Vinogradov, M.E., *Oceanology*, Apr. 1995, 34(5), p.661-666, Translated from Okeanologiia. 9 refs.

Oceanography, Estuaries, Marine biology, Ecosystems, Ecology, Biomass, Oceanographic surveys, Statistical analysis, Simulation, Mathematical models, Russia—Kara Sea

50-3541

Estimation of the autochtonous detritus flux through plankton communities of the Kara Sea.

Lebedeva, L.P., Shushkina, E.A., *Oceanology*, Apr. 1995, 34(5), p.667-670, Translated from Okeanologiia. 8 refs.

Oceanography, Marine biology, Sedimentation, Nutrient cycle, Biomass, Plankton, Ecosystems, Ecology, Sampling, Turbulent exchange, Statistical analysis, Russia—Kara Sea

50-3542

Marginal filter of the ocean.

Lisitsyn, A.P., *Oceanology*, Apr. 1995, 34(5), p.671-682, Translated from Okeanologiia. 39 refs.

Oceanography, Subpolar regions, Hydrogeochemistry, Estuaries, Runoff, Sedimentation, Turbulent exchange, Ice cover effect, Solubility, Absorption, Russia—Kara Sea

50-3543

Particle fluxes in the Kara Sea and Ob and Yenisey estuaries.

Lisitsyn, A.P., Shevchenko, V.P., Vinogradov, M.E., Severina, O.V., Vavilova, V.V., Mitskevich, I.N., *Oceanology*, Apr. 1995, 34(5), p.683-693, Translated from Okeanologiia. 22 refs.

Oceanography, Subpolar regions, Suspended sediments, Biomass, Classifications, Plankton, Decomposition, Sediment transport, Estuaries, Turbulent diffusion, Geochemical cycles, Sampling, Organic nuclei, Russia—Kara Sea

50-3544

^{234}Th as an indicator of particulate fluxes in the Kara Sea.

Kuptsov, V.M., Lisitsyn, A.P., Shevchenko, V.P., *Oceanology*, Apr. 1995, 34(5), p.694-700, Translated from Okeanologiia. 3 refs.

Oceanography, Subpolar regions, Estuaries, Runoff, Sedimentation, Suspended sediments, Turbulent diffusion, Biomass, Plankton, Radioactive isotopes, Sampling, Isotope analysis, Correlation, Russia—Kara Sea

50-3545

Chemical composition of bottom sediments from the Kara Sea and estuaries of the Ob and Yenisey Rivers.

Gurvich, E.G., Isaeva, A.B., Demina, L.V., Levitan, M.A., Murav'ev, K.G., *Oceanology*, Apr. 1995, 34(5), p.701-709, Translated from Okeanologiia. 10 refs.

Oceanography, Subpolar regions, Pleistocene, Sedimentation, Turbulent diffusion, Bottom sediment, Mud, Chemical composition, Estuaries, Geochemical cycles, Sampling, Russia—Kara Sea

50-3546

Sequence types of Upper Quaternary deposits in the Kara Sea.

Levitan, M.A., Khusid, T.A., Kuznetsov, V.M., Politova, N.V., Pavlova, G.A., *Oceanology*, Apr. 1995, 34(5), p.710-721, Translated from Okeanologiia. 10 refs.

Oceanography, Pleistocene, Subpolar regions, Bottom sediment, Marine deposits, Quaternary deposits, Sedimentation, Stratigraphy, Lithology, Sampling, Turbulent diffusion, Topographic effects, Russia—Kara Sea

50-3547

Ferromanganese nodules of the Kara Sea.

Bogdanov, IU.A., et al, *Oceanology*, Apr. 1995, 34(5), p.722-732, Translated from Okeanologiia. 16 refs.

Oceanography, Subpolar regions, Minerals, Metals, Sedimentation, Bottom sediment, Diagenesis, Mineralogy, Distribution, Sampling, Chemical composition, Russia—Kara Sea

50-3548

Mantle viscosity from the simultaneous inversion of multiple data sets pertaining to postglacial rebound.

Peltier, W.R., Jiang, X.H., *Geophysical research letters*, Mar. 1, 1996, 23(5), p.503-506, 19 refs.

Glacial geology, Isostasy, Tectonics, Sea level, Geologic processes, Viscosity, Models, Statistical analysis

50-3549

Large amplitude solar modulation cycles of ^{10}Be in Antarctica: implications for atmospheric mixing processes and interpretation of the ice core record.

Steig, E.J., Polissar, P.J., Stuiver, M., Grootes, P.M., Finkel, R.C., *Geophysical research letters*, Mar. 1, 1996, 23(5), p.523-526, 40 refs.

Polar atmospheres, Electric fields, Solar radiation, Ice sheets, Ice cores, Photochemical reactions, Isotope analysis, Gamma irradiation, Periodic variations, Climatology, Periodic variations, Antarctica—Taylor Dome

Beryllium isotope (^{10}Be) concentrations in an ice core at Taylor Dome show greater variation over the last 75 years than similar ^{10}Be time-series from Greenland. Like the Greenland records, the new antarctic data exhibit a strong periodicity which follows expected changes in the production rate of ^{10}Be over the 11-year solar cycle. Noting that the amplitude of production-rate variation is both latitude and altitude dependent, the authors estimate the relative contribution of ^{10}Be from different atmospheric reservoirs. The calculations yield a relatively small (<35%) contribution from the low-to-midlatitude stratosphere, suggesting a weak coupling between antarctic ^{10}Be and geomagnetic field intensity. (Auth. mod.)

50-3550

Determination of the isotopic abundances of heavy O_3 as observed in arctic ground-based FTIR-spectra.

Meier, A., Notholt, J., *Geophysical research letters*, Mar. 1, 1996, 23(5), p.551-554, 19 refs.

Polar atmospheres, Remote sensing, Atmospheric composition, Stratosphere, Solar radiation, Radiation absorption, Ozone, Isotope analysis, Infrared spectroscopy, Distribution

50-3551

Model calculations of ozone depletion in the arctic polar vortex for 1991/92 to 1994/95.

Chipperfield, M.P., Lee, A.M., Pyle, J.A., *Geophysical research letters*, Mar. 1, 1996, 23(5), p.559-562, 13 refs.

Polar atmospheres, Climatology, Polar stratospheric clouds, Atmospheric density, Aerosols, Decomposition, Photochemical reactions, Ozone, Seasonal variations, Temperature effects, Models

50-3552

Drift of the tabular iceberg Filchner 1986A. [Deriva del témpano tabular Filchner 1986A]

Skvarca, P., García, M.J., Segundas Jornadas de Comunicaciones sobre Investigaciones Antárticas (Communication Days on Antarctic Investigations), Buenos Aires, Instituto Antártico Argentino, 1993, p.105-109, In Spanish. 7 refs.

DLC G845.5.J67

Icebergs, Drift, Ice shelves, Calving, Spaceborne photography, Remote sensing, Antarctica—Filchner Ice Shelf

Low and high resolution NOAA and METEOR images, recorded between Aug. 28 and Oct. 14, 1991 and used in the study of the drifting trajectory of an antarctic tabular iceberg, are discussed and illustrated.

50-3553

Sea-ice extent and net mass accumulation at the surface in the sectors of the Amundsen, Bellingshausen, and Weddell seas, Antarctica.

Giovinetto, M.B., Compagnucci, R.H., Segundas Jornadas de Comunicaciones sobre Investigaciones Antárticas (Communication Days on Antarctic Investigations), Buenos Aires, Instituto Antártico Argentino, 1993, p.129-141, 17 refs.

DLC G845.5.J67

Sea ice distribution, Ice volume, Mass balance, Ice models, Antarctica—Amundsen Sea, Antarctica—Bellingshausen Sea, Antarctica—Weddell Sea

Sea-ice extent and net mass accumulation at the surface of ice sheets are important elements in climatic modeling. In this study, the authors use the outer boundary of sea-ice concentrations of 15% and 20% to define "open ocean" as a source of atmospheric moisture, and analyze the relationship between distance to open ocean and the rate of accumulation for grid-point locations in the antarctic sectors of Amundsen, Bellingshusen, and Weddell seas. The area of the Antarctic Peninsula north of 70°S is excluded from this study; in this region of complex topography and air drainage pattern the areal distribution of the accumulation rate is not suitable for interpolation as required in grid sampling. (Auth. mod.)

50-3554

Ozone observations on Antarctic Peninsula. [Observaciones de ozono en la península Antártica]

Taalas, P., Kyrö, E., Huovila, S., Supperi, A., Tafuri, V., Ginzburg, M., Segundas Jornadas de Comunicaciones sobre Investigaciones Antárticas (Communication Days on Antarctic Investigations), Buenos Aires, Instituto Antártico Argentino, 1993, p.145-148, In Spanish.

DLC G845.5.J67

Ozone, Atmospheric composition, Measurement, Antarctica—Marambio Station

Data on ozone depletion at Marambio Station 1987-1990, monthly means of the partial pressure of ozone, and total ozone values for Jan.-Apr., Aug.-Dec. 1987-1990, are presented. Ozone depletion from the end of winter to beginning of spring was observed each year; the lowest value was measured in Oct. of 1989.

50-3555

Glacial geology: how ice shapes the land.

Erickson, J., Changing Earth series, New York, Facts On File, Inc., 1996, 248p., Refs. p.234-240.

Education, Glacial geology, Paleoclimatology, Pleistocene, Glaciation, Glacial deposits, Icebergs, Tundra, Permafrost, Glaciers, Antarctica, Canada, United States—Alaska

50-3556

Sea ice off the Icelandic coasts, October 1987-September 1988. [Hafís við strendur Íslands, október 1987-september 1988], Reykjavík, Icelandic Meteorological Office (Veðurstofa Íslands), 1988, 45p., In Icelandic with English summary.

DLC GB2513.H34 1987/88

Ice surveys, Sea ice distribution, Ice conditions, Ice edge, Iceland

50-3557

Sea ice off the Icelandic coasts, October 1988-September 1989. [Hafís við strendur Íslands, október 1988-september 1989], Reykjavík, Icelandic Meteorological Office (Veðurstofa Íslands), 1990, 53p., In Icelandic with English summary.

DLC GB2513.H34 1988/89

Ice surveys, Sea ice distribution, Ice conditions, Ice edge, Iceland

50-3558

Arctic Pilot Project integrated route analysis. Chapter 2. Physical aspects of the route areas. Calgary, Alberta, Petro-Canada, Inc., [1981], p.2/1-2/522 + appends., Refs. p.2/517-2/522. This contains only chapter 2 and the appendices bound separately. The table of contents lists 6 chapters.

Ice surveys, Sea ice distribution, Ice conditions, Ice routing, Route surveys, Natural gas, Liquefied gases, Petroleum transportation, Tanker ships, Icebreakers, Canada

50-3559

Protecting water meters from freezing.

Kotry, J., Finnish-French Symposium on Water Supply and Sewerage, Helsinki, Finland, Sep. 25-27, 1991. Edited by K. Saarikoski and VTI Symposium 129, Espoo, Technical Research Center of Finland, 1992, p.91-98.

Water pipelines, Temperature control, Thermal insulation, Municipal engineering, Measuring instruments, Flow measurement, Valves, Frost penetration, Frost protection, Design

50-3560

Production and depletion of supercooled liquid water in a Colorado winter storm.

Politovich, M.K., Bernstein, B.C., *Journal of applied meteorology*, Dec. 1995, 34(12), p.2631-2648, 24 refs.

Cloud physics, Synoptic meteorology, Radar echoes, Probes, Supercooled clouds, Cloud droplets, Water content, Turbulent boundary layer, Fronts (meteorology), Ice accretion, Snow pellets, Aircraft icing, Ice forecasting

50-3561

Upper Atmosphere Research Satellite (UARS) Microwave Limb Sounder (MLS) experiment.

Waters, J., et al, Specialist Meeting on Microwave Radiometry and Remote Sensing Applications, 3rd, Boulder, CO, Jan. 14-16, 1992. µrad '92. Proceedings. Edited by R. Westwater, Boulder, National Oceanic and Atmospheric Administration, June 1992, p.7-10.

DLC G70.39.S65

Spacecraft, Climatology, Radiometry, Remote sensing, Polar atmospheres, Atmospheric composition, Ozone, Sounding, Design

The Microwave Limb Sounder (MLS) experiment, launched Sep. 12, 1991 on Upper Atmosphere Research Satellite (UARS), is the first use of microwave limb sounding from orbit to study the Earth's atmosphere. The primary geophysical parameters obtained from the experiment are ClO (15-45 km), O_3 (15-80 km), H_2O (10-85 km), temperature (25-60 km), and pressure (30-60 km). Initial results include the first maps of enhanced levels of ClO in the antarctic lower stratosphere, the principal cause of the antarctic ozone hole. SO_2 injected into the tropical stratosphere by the Pinatubo volcano has also been measured and mapped. (Auth. mod.)

50-3562

Application of passive microwave retrieval algorithms to monitor global snow cover.

Armstrong, R.L., Hardman, M.A., Specialist Meeting on Microwave Radiometry and Remote Sensing Applications, 3rd, Boulder, CO, Jan. 14-16, 1992. µrad '92. Proceedings. Edited by R. Westwater, Boulder, National Oceanic and Atmospheric Administration, June 1992, p.99-103, 26 refs.

DLC G70.39.S65

Climatology, Remote sensing, Snow surveys, Spacecraft, Snow cover distribution, Radiometry, Snow optics, Scattering, Grain size, Brightness, Data processing, Resolution

50-3563

Multi-temporal microwave satellite observations of plains snowpacks.

Wankiewicz, A., Dalton, A., Specialist Meeting on Microwave Radiometry and Remote Sensing Applications, 3rd, Boulder, CO, Jan. 14-16, 1992. µrad '92. Proceedings. Edited by R. Westwater, Boulder, National Oceanic and Atmospheric Administration, June 1992, p.110-113, 2 refs.

DLC G70.39.S65

Climatology, Plains, Snow surveys, Snow hydrology, Snow cover structure, Classifications, Remote sensing, Spacecraft, Radiometry, Snow water equivalent, Models

50-3564

Decision-making algorithm to reduce the effects of second order parameters on ice concentration and type estimates derived from SSM/I brightness temperatures.

St. Germain, K.M., Swift, C.T., Specialist Meeting on Microwave Radiometry and Remote Sensing Applications, 3rd, Boulder, CO, Jan. 14-16, 1992. µrad '92. Proceedings. Edited by R. Westwater, Boulder, National Oceanic and Atmospheric Administration, June 1992, p.115-119, 3 refs.

DLC G70.39.S65

Remote sensing, Climatology, Sea ice distribution, Classifications, Surface temperature, Ice surveys, Brightness, Spaceborne photography, Radiometry, Image processing, Accuracy, Models

50-3565

Theoretical basis for passive microwave remote sensing of cirrus.

Evans, K.F., Stephens, G.L., Specialist Meeting on Microwave Radiometry and Remote Sensing Applications, 3rd, Boulder, CO, Jan. 14-16, 1992. µrad '92. Proceedings. Edited by R. Westwater, Boulder, National Oceanic and Atmospheric Administration, June 1992, p.262-266, 4 refs.

DLC G70.39.S65

Climatology, Cloud physics, Remote sensing, Radiometry, Scattering, Brightness, Ice crystal optics, Ice crystal structure, Ice crystal size, Classifications, Models

50-3566

Dual microwave frequency retrieval algorithm for monthly precipitation over land and ocean using probability distribution functions.

Weng, F., Vonder Haar, T.H., Specialist Meeting on Microwave Radiometry and Remote Sensing Applications, 3rd, Boulder, CO, Jan. 14-16, 1992. µrad '92. Proceedings. Edited by R. Westwater, Boulder, National Oceanic and Atmospheric Administration, June 1992, p.289-293, 10 refs.

DLC G70.39.S65

Precipitation (meteorology), Climatology, Remote sensing, Radiometry, Ice crystal optics, Freezing points, Stratification, Brightness, Statistical analysis, Models

50-3567

SSM/I mapped experimental environmental image products.

Donahue, D.R., Boettcher, C.M., Grody, N.C., Taylor, P.M., Specialist Meeting on Microwave Radiometry and Remote Sensing Applications, 3rd, Boulder, CO, Jan. 14-16, 1992. µrad '92. Proceedings. Edited by R. Westwater, Boulder, National Oceanic and Atmospheric Administration, June 1992, p.294-297, 5 refs.

DLC G70.39.S65

Remote sensing, Geophysical surveys, Sensor mapping, Radiometry, Spaceborne photography, Snow cover distribution, Sea ice distribution, Classifications, Data processing, Imaging

50-3568

Liquid water contents and precipitable waters in the atmosphere around the Syowa Station in Antarctica obtained from the data of ground based and satellite microwave radiometers.

Wada, M., Yamanouchi, Y., Specialist Meeting on Microwave Radiometry and Remote Sensing Applications, 3rd, Boulder, CO, Jan. 14-16, 1992. µrad '92. Proceedings. Edited by R. Westwater, Boulder, National Oceanic and Atmospheric Administration, June 1992, p.329-333, 6 refs.

DLC G70.39.S65

Polar atmospheres, Precipitation (meteorology), Clouds (meteorology), Water content, Water vapor, Remote sensing, Radiometry, Correlation, Antarctica—Showa Station

Liquid water content and precipitable waters around Showa Station were estimated from data of an SSM/I mounted on the DMSP satellite and ground based microwave radiometers. The maximum values of the liquid water content and the precipitable water associated with a strong cyclone were approx. 55 mg/cm^2 and 15 mm, respectively. Considering the data of the SSM/I for the long-period mean, e.g. 3-hour mean, the maximum values of liquid water content and precipitable water were estimated to be about 25 mg/cm^2 and 10 mm, respectively. The monthly mean value of the precipitable water was about 5 mm. (Auth. mod.)

50-3569

Detection of possible aircraft icing in clouds by passive-active radars.

Tarabukin, I.A., Shchukin, G.G., Specialist Meeting on Microwave Radiometry and Remote Sensing Applications, 3rd, Boulder, CO, Jan. 14-16, 1992. µrad '92. Proceedings. Edited by R. Westwater, Boulder, National Oceanic and Atmospheric Administration, June 1992, p.381-385, 10 refs.

DLC G70.39.S65

Aircraft icing, Cloud physics, Remote sensing, Sounding, Radiometry, Supercooled clouds, Water content, Ice forecasting

50-3570

Design of an Airborne Imaging Microwave Radiometer.

Paul, J.L., Gibbs, B.W., Nguyen, P., Warren, F.G.R., Specialist Meeting on Microwave Radiometry and Remote Sensing Applications, 3rd, Boulder, CO, Jan. 14-16, 1992. µrad '92. Proceedings. Edited by R. Westwater, Boulder, National Oceanic and Atmospheric Administration, June 1992, p.455-459.

DLC G70.39.S65

Climatology, Airborne equipment, Geophysical surveys, Radiometry, Sea ice distribution, Ice surveys, Sensor mapping, Imaging, Design, Computer applications

50-3571

Model to retrieve precipitation rate profiles from airborne radar and radiometer measurements.

Weinman, J.A., Schols, J.L., Specialist Meeting on Microwave Radiometry and Remote Sensing Applications, 3rd, Boulder, CO, Jan. 14-16, 1992. µrad '92. Proceedings. Edited by R. Westwater, Boulder, National Oceanic and Atmospheric Administration, June 1992, p.460-466, 7 refs.

DLC G70.39.S65

Climatology, Precipitation (meteorology), Remote sensing, Airborne radar, Radiometry, Radar echoes, Reflectivity, Cloud physics, Profiles, Ice crystal optics, Brightness, Mathematical models

50-3572

Ice in the intake causes close call. *Flight safety digest*, Feb. 1990, 9(2), p.11-12.

DLC TL553.5.F5564

Aircraft icing, Air flow, Ice cover effect, Jet engines, Cold weather operation, Ducts, Covering, Accidents, Safety

50-3573

Carburetor ice gremlin? *Flight safety digest*, Mar. 1990, 9(3), p.20.

DLC TL553.5.F5564

Aircraft icing, Helicopters, Carburetors, Accidents, Temperature control, Heating, Safety

50-3574

Small airline continues to win big battle against aircraft ground icing. *Flight safety digest*, Dec. 1992, 11(12), p.1-8.

DLC TL553.5.F5564

Aircraft icing, Ground ice, Ice control, Ice removal, Ice breaking, Ice detection, Antifreezes, Cold weather performance, Safety

50-3575

Icing degrades aircraft performance; fluids provide best defense against ice on the ground. *Flight safety digest*, Dec. 1992, 11(12), p.9-14.

DLC TL553.5.F5564

Aircraft icing, Antifreezes, Classifications, Ground ice, Safety, Ice control, Ice removal, Ice prevention, Standards, Viscosity

50-3576

New U.S. rules established for aircraft ground deicing and anti-icing. *Flight safety digest*, Dec. 1992, 11(12), p.15-24.

DLC TL553.5.F5564

Aircraft icing, Ground ice, Ice control, Ice prevention, Ice removal, Standards, Cold weather operation, Safety, Accidents

50-3577

Aspects of the biogeochemistry of sulphur in glacial melt water ponds on the McMurdo Ice Shelf, Antarctica.

De Mora, S.J., Lee, P.A., Grout, A., Schall, C., Heumann, K.G., *Antarctic science*, Mar. 1996, 8(1), p.15-22, Refs. p.21-22.

Limnology, Microbiology, Geochemical cycles, Ice shelves, Meltwater, Antarctica—McMurdo Ice Shelf

The distribution of dimethylsulphide (DMS), together with the precursor dimethylsulphoniopropionate (DMSP) and the oxidation product dimethylsulphoxide (DMSO), was measured in melt waters on the McMurdo Ice Shelf in the immediate vicinity of Bratina I. Conductivity in these sulphate-dominated ponds was extremely variable, ranging from 0.106-52.3 mS/cm. Similarly, chlorophyll *a* concentrations in the pond waters and mats differed considerably. The biomass was dominated by benthic felts of phototrophic cyanobacteria, which might act as a source of biogenic sulphur compounds in the ponds. Very high concentrations of DMSO were ubiquitous in the ponds in the ice-cored moraine region of the ice shelf, with dissolved concentrations 1-2 orders of magnitude greater than those of DMS. It is difficult to ascribe the formation of DMSO solely to the conventionally accepted pathways of DMS oxidation by either bacterial activity or photochemical reactions. A direct biosynthetic production from phytoplankton or bacteria might be involved, which means that DMSO in aquatic environments could act as a significant source of DMS rather than as a sink as generally supposed. (Auth. mod.)

50-3578

Log of the *Scotia* Expedition, 1902-4.

Bruce, W.S., Edinburgh, Edinburgh University Press, 1992, 306p., Edited by P. Speak. Included are a combined index of people, places, and things, and a Station Log of separate entries consecutively numbered from 1-553. 14 refs.

DLC G850 1902.S3B78 1992

Expeditions, Exploration, Sea ice distribution, Marine biology, —South Orkney Islands, —Laurie Island

This work recounts the voyage of the *Scotia* to the southern polar regions during the Scottish National Antarctic Expedition, 1902-1904. The science programs were under the direction of the author; the managemant and safety of the vessel were under the command of Captain Thomas Robertson. Pre-sailing arrangements included seeking funding, contacting societies and influential individuals, and assembling a science group. These tasks and a description of the exploration environment of Edinburgh at the turn of the century comprise the prefatory material, followed by Bruce's narrative log which begins Feb. 2, 1902 and continues through Apr. 19, 1904. Generally it describes the recovery of marine biota between the South Orkneys and the northeastern end of Weddell Sea; the recoveries at other South Orkney locations and the trawling in these areas; naming the permanent anchorage at Laurie I. Scotia Bay; erecting Omond House and the Copeland Observatory; the thorough nautical exploration of Laurie I.; the discovery and naming of Coats Land on the Antarctic Continent; and being beset by ice in 71S/18W (approx.), Mar. 15-20, 1904.

50-3579

Design guide for frost-protected shallow foundations.

NAHB Research Center, *NAHB Research Center. Instrument*, June 1994, No.DU100K000005897, 30p. + appends., 17 refs. Prepared for the U.S. Department of Housing and Urban Development, Office of Policy Development and Research.

Foundations, Countermeasures, Frost heave, Frost penetration, Design, Insulation, Walls, Cold weather construction, Buildings, Construction materials

50-3580

Modern glacial environments: processes, dynamics and sediments.

Menzies, J., ed, Glacial environments: Volume 1, Oxford, England, Butterworth-Heinemann Ltd., 1995, 621p., Refs. p.507-590. For individual papers see 50-3581 through 50-3595.

DLC GB2403.2.M632 1995

Glaciation, Glacial geology, Glacial erosion, Glacial deposits, Glacial hydrology, Outwash, Moraines, Sediment transport, Paleoclimatology

50-3581

Glacial environments.

Menzies, J., Modern glacial environments: processes, dynamics and sediments. Edited by J. Menzies, Oxford, England, Butterworth-Heinemann Ltd., 1995, p.1-7, Numerous refs. p.507-590.

Glaciation, Glacial geology, Glacial deposits, Global change, Paleoclimatology

50-3582

Global glacial chronologies and causes of glaciation.

Calkin, P.E., Young, G.M., Modern glacial environments: processes, dynamics and sediments. Edited by J. Menzies, Oxford, England, Butterworth-Heinemann Ltd., 1995, p.9-75, Numerous refs. p.507-590.

Glaciation, Glacial geology, Glacier formation, Glacier oscillation, Ice age theory, Stratigraphy, Geochronology, Paleoclimatology, Global change

50-3583

Ice sheet modelling and the reconstruction of former ice sheets from glacial geo(morpho)logical field data.

Hughes, T.J., Modern glacial environments: processes, dynamics and sediments. Edited by J. Menzies, Oxford, England, Butterworth-Heinemann Ltd., 1995, p.77-99, Numerous refs. p.507-590.

Glaciation, Glacial geology, Ice sheets, Glacier flow, Ice age theory, Paleoclimatology, Computerized simulation

50-3584

Glaciers and ice sheets.

Menzies, J., Modern glacial environments: processes, dynamics and sediments. Edited by J. Menzies, Oxford, England, Butterworth-Heinemann Ltd., 1995, p.101-138, Numerous refs. p.507-590.

Glaciation, Glacial geology, Ice sheets, Glacier formation, Glacier mass balance, Glacier heat balance, Glacier flow

50-3585

Dynamics of ice flow.

Menzies, J., Modern glacial environments: processes, dynamics and sediments. Edited by J. Menzies, Oxford, England, Butterworth-Heinemann Ltd., 1995, p.139-196, Numerous refs. p.507-590.

Glacier flow, Glacier friction, Ice sheets, Glacier beds, Basal sliding, Glacier surges, Mathematical models

50-3586

Hydrology of glaciers.

Menzies, J., Modern glacial environments: processes, dynamics and sediments. Edited by J. Menzies, Oxford, England, Butterworth-Heinemann Ltd., 1995, p.197-239, Numerous refs. p.507-590.

Glacial hydrology, Subglacial drainage, Meltwater, Glacier beds, Glacial lakes

50-3587

Processes of erosion.

Iverson, N.R., Modern glacial environments: processes, dynamics and sediments. Edited by J. Menzies, Oxford, England, Butterworth-Heinemann Ltd., 1995, p.241-259, Numerous refs. p.507-590.

Glacial geology, Glacial erosion, Glacier friction, Glacier beds

50-3588

Processes of transportation.

Kirkbride, M.P., Modern glacial environments: processes, dynamics and sediments. Edited by J. Menzies, Oxford, England, Butterworth-Heinemann Ltd., 1995, p.261-292, Numerous refs. p.507-590.

Glacial geology, Glacial erosion, Glacial deposits, Moraines, Sediment transport

50-3589

Processes of terrestrial deposition.

Whiteman, C.A., Modern glacial environments: processes, dynamics and sediments. Edited by J. Menzies, Oxford, England, Butterworth-Heinemann Ltd., 1995, p.293-308, Numerous refs. p.507-590.

Glacial geology, Glacial deposits, Glacial till, Outwash, Sediment transport

50-3590

Processes of glaciotectonism.

Van der Wateren, F.M., Modern glacial environments: processes, dynamics and sediments. Edited by J. Menzies, Oxford, England, Butterworth-Heinemann Ltd., 1995, p.309-335, Numerous refs. p.507-590.

Glaciation, Glacial geology, Glacier beds, Glacial deposits, Moraines, Tectonics

50-3591

Sedimentary and hydrologic processes within modern terrestrial valley glaciers.

Lawson, D.E., MP 3785, Modern glacial environments: processes, dynamics and sediments. Edited by J. Menzies, Oxford, England, Butterworth-Heinemann Ltd., 1995, p.337-363, Numerous refs. p.507-590.

Alpine glaciation, Mountain glaciers, Glacial geology, Glacial erosion, Glacial deposits, Glacial hydrology, Moraines, Outwash, Sediment transport

50-3592

Sediments and landforms of modern proglacial terrestrial environments.

Maizels, J., Modern glacial environments: processes, dynamics and sediments. Edited by J. Menzies, Oxford, England, Butterworth-Heinemann Ltd., 1995, p.365-416, Numerous refs. p.507-590.

Glacial geology, Glacial erosion, Glacial deposits, Glacial hydrology, Subglacial drainage, Outwash, Sediment transport

50-3593

Glaciolacustrine environments.

Ashley, G.M., Modern glacial environments: processes, dynamics and sediments. Edited by J. Menzies, Oxford, England, Butterworth-Heinemann Ltd., 1995, p.417-444, Numerous refs. p.507-590.

Glacial hydrology, Glacial lakes, Icebound lakes, Glacial deposits, Outwash, Ice rafting, Lacustrine deposits, Bottom sediment, Limnology

50-3594

Modern glaciomarine environments.

Powell, R.D., Domack, E.W., Modern glacial environments: processes, dynamics and sediments. Edited by J. Menzies, Oxford, England, Butterworth-Heinemann Ltd., 1995, p.445-486, Numerous refs. p.507-590.

Glaciation, Glacial geology, Glacial deposits, Moraines, Ice rafting, Marine geology, Marine deposits, Bottom sediment, Sediment transport

50-3595

Glacial crushing, weathering and diagenetic histories of quartz grains inferred from scanning electron microscopy.

Mahaney, W.C., Modern glacial environments: processes, dynamics and sediments. Edited by J. Menzies, Oxford, England, Butterworth-Heinemann Ltd., 1995, p.487-506, Numerous refs. p.507-590.

Glacial geology, Glacial erosion, Glacial deposits, Glacial till, Weathering, Diagenesis, Soil structure, Microstructure, Paleoclimatology, Scanning electron microscopy

50-3596

Snow and ice control.

Minnesota. Office of the Legislative Auditor, Best practices review. No.95-06, St. Paul, May 1995, 148p., 48 refs.

DLC TE220.5.S65

Road maintenance, Winter maintenance, Cold weather operation, Ice control, Snow removal, Municipal engineering, Logistics, Snow removal equipment, Cost analysis

50-3597

RIVER3: simulation of river discharge and sediment transport.

Syvitski, J.P.M., Alcott, J.M., *Computers & geosciences*, Feb. 1995, 21(1), p.89-151, 24 refs.

Hydrology, River basins, Surface drainage, River flow, Hydrography, Sediment transport, Snow hydrology, Snowmelt, Glacier melting, Runoff, Forecasting, Computerized simulation, Computer programs

50-3598

Arctic Centre news, 1993, No.2. Rovaniemi, University of Lapland, 11p.

Research projects, Oceanography, Marine biology, Sea ice, Glaciology, International cooperation, Arctic Ocean

50-3599

Arctic Centre news, 1993, No.3. Rovaniemi, University of Lapland, 12p.

Research projects, International cooperation, Oceanography, Ice sheets, Environmental protection, Arctic Ocean

50-3600

On the formation of electron depletions at the summer polar mesopause.

Klostermeyer, J., *Geophysical research letters,* Feb. 15, 1996, 23(4), p.335-338, 15 refs.

Polar atmospheres, Atmospheric electricity, Cloud physics, Charge transfer, Ice crystal growth, Scavenging, Vapor pressure, Aerosols, Cosmic dust, Heterogeneous nucleation

50-3601

Organic carbon paleo-pCO_2 and marine-ice core correlations and chronology.

Raymo, M.E., Horowitz, M., *Geophysical research letters,* Feb. 15, 1996, 23(4), p.367-370, 30 refs.

Paleoclimatology, Climatic changes, Marine deposits, Ice sheets, Ice cores, Isotope analysis, Geochronology, Correlation, Antarctica—Vostok Station

The authors present evidence that marine organic matter $\delta^{13}C$ measurements can closely reproduce the Vostok ice core CO_2 record and, in addition, can be used to evaluate the absolute Vostok chronology and the transfer of that chronology between the marine and terrestrial realms. The data support recent speculations that the base of the Vostok ice core (2755 m) is still within oxygen isotope stage 7, in agreement with recent orbitally-tuned ice core chronologies. (Auth. mod.)

50-3602

Bursts of cloud condensation nuclei (CCN) by dissipating clouds at Palmer Station, Antarctica.

Saxena, V.K., *Geophysical research letters,* Jan. 1, 1996, 23(1), p.69-72, 31 refs.

Polar atmospheres, Cloud physics, Cloud dissipation, Climatology, Condensation nuclei, Aerosols, Nucleation, Atmospheric density, Supersaturation, Antarctica—Palmer Station

Presented here is a case study of cloud-mediated production of cloud condensation nuclei (CCN) recorded at Palmer Station on Jan. 20, 1994. Four instances of CCN bursts occurred on Jan. 17, 19, 20 and Feb. 7, 1994 when cloud base descended to the surface and dissipated under prevailing meteorological conditions. The most spectacular event occurred on Jan. 20 when the CCN concentration was enhanced by a factor of four at 0.25% supersaturation (with respect to water) compared to the pre-event concentration. At 1.25% supersaturation, the corresponding enhancement was by a factor of seven. This indicated a larger production of aerosol particles in smaller size ranges. The elevated CCN concentrations were measured for over 15 hours. (Auth. mod.)

50-3603

Arctic ozone depletion observed by UARS MLS during the 1994-95 winter.

Manney, G.L., et al, *Geophysical research letters,* Jan. 1, 1996, 23(1), p.85-88, 12 refs.

Polar atmospheres, Climatology, Climatic changes, Stratosphere, Ozone, Atmospheric density, Attenuation, Chemical properties, Sounding, Seasonal variations

50-3604

Positive ion depletion in a noctilucent cloud.

Balsiger, F., Kopp, E., Friedrich, M., Torkar, K.M., Wälchli, U., Witt, G., *Geophysical research letters,* Jan. 1, 1996, 23(1), p.93-96, 20 refs.

Cloud physics, Hydrates, Ion diffusion, Charge transfer, Ice crystal growth, Ice electrical properties, Scavenging, Cloud dissipation, Spectroscopy, Sounding

50-3605

Chlorophyll in the western Bering Sea.

Mordasova, N.V., *Oceanology,* Feb. 1995, 34(4), p.503-509, Translated from Okeanologiia. 17 refs.

Oceanography, Marine biology, Plankton, Biomass, Ice edge, Water chemistry, Chlorophylls, Sampling, Seasonal variations, Bering Sea

50-3606

Fluxes of nutrients between benthic and planktic communities in the coastal zone of the Barents Sea.

Kuznetsov, L.L., Volkovskaia, L.E., *Oceanology,* Feb. 1995, 34(4), p.510-514, Translated from Okeanologiia. 14 refs.

Oceanography, Marine biology, Biomass, Plankton, Algae, Ecosystems, Bottom sediment, Nutrient cycle, Hydrogeochemistry, Seasonal variations, Barents Sea

50-3607

Daily vertical migration of antarctic copepods beneath the ice.

Tseĭtlin, V.B., Kolosova, E.N., Mel'nikov, I.A., *Oceanology,* Feb. 1995, 34(4), p.517-520, Translated from Okeanologiia. 14 refs.

Marine biology, Plankton, Biomass, Distribution, Migration, Diurnal variations, Sampling, Subglacial observations, Ice cover effect, Antarctica—Weddell Sea

The daily vertical migration of copepods in the ice-covered western part of the Weddell Sea was studied. Sea ice was about 2 m thick with a 0.5 m snow cover. The medium depth of habitation of *Metridia gerlachei* (female) varied from 53 m at night to 175 m in daytime. Copepodite stage V of *Calanoides acutus* performed inverted migration with lesser depth range; they migrated from 198 m in daytime to 258 m at night. Data for *M. gerlachei* vertical migration in ice-covered and ice-free areas of the Weddell Sea were compared. It was shown that in an ice-free area, the medium depth of *M. gerlachei* was 47 m deeper than in an ice-covered area, but the range of migration was greater by 46 m. (Auth. mod.)

50-3608

Ecosystem dynamics of the Bering and Chukchi Seas: Fourth Russian-American expedition (55th cruise of the R/V Okean, July 23 to October 2, 1993).

Tsyban', A.V., *Oceanology,* Feb. 1995, 34(4), p.571-574, Translated from Okeanologiia.

Oceanographic surveys, Expeditions, Research projects, International cooperation, Ecosystems, Marine biology, Biomass, Sounding, Geochemical cycles, Sedimentation, Bering Sea, Chukchi Sea

50-3609

Estimation of ice hydrometeor types and shapes from radar polarization measurements.

Matrosov, S.Y., Reinking, R.F., Kropfli, R.A., Bartram, B.W., *Journal of atmospheric and oceanic technology,* Feb. 1996, 13(1), p.85-96, 30 refs.

Cloud physics, Precipitation (meteorology), Remote sensing, Ice detection, Ice crystal optics, Ice crystal structure, Classifications, Radar echoes, Polarization (waves), Indexes (ratios), Backscattering, Analysis (mathematics)

50-3610

Attenuation of erythemal effective irradiance by cloudiness at low and high altitude in the alpine region.

Blumthaler, M., Ambach, W., Cede, A., Staehelin, J., *Photochemistry and photobiology,* Feb. 1996, 63(2), p.193-196, 22 refs.

Climatology, Ozone, Atmospheric density, Cloud cover, Optical properties, Radiance, Solar radiation, Ultraviolet radiation, Attenuation, Photometry, Spectra, Environmental impact

50-3611

Melting driven thermohaline convection.

Bénard, C., Bénard, R., Bennacer, R., Gobin, D., *Physics of fluids,* Jan. 1996, 8(1), p.112-130, 47 refs.

Ice physics, Ice melting, Fluid dynamics, Solutions, Buoyancy, Convection, Ice water interface, Salinity, Heat transfer, Temperature effects, Mathematical models, Simulation, Thermal diffusion

50-3612

Applying the Richards function in freezing tolerance determination with electrolyte and phenolic leakage techniques.

Aniśko, T., Lindstrom, O.M., *Physiologia plantarum,* Oct. 1995, 95(2), p.281-287, 31 refs.

Plant physiology, Frost resistance, Cold tolerance, Plant tissues, Electrical resistivity, Damage, Cold weather tests, Temperature effects, Statistical analysis, Viability

50-3613

Variations on the Schaeffer replication technique for snowflakes.

Benko, J.J., *Microscope,* 1995, 43(1), p.17-20, 4 refs.

Snowflakes, Snow crystal structure, Replicas, Laboratory techniques, Microscope slides, Visibility

50-3614

Study on cosmic dust particles in antarctic ice, snow and non-antarctic region and their origins.

Wang, D.D., Dai, C.D., *Antarctic research,* Dec. 1995, 6(2), p.1-17, Refs. p.16-17. For Chinese original see 49-3148 or 23F-52281.

Ice composition, Snow composition, Cosmic dust

A large number of cosmic dust particles, micrometeorites and volcanic dust bands have been found and collected in antarctic ice, snow and glacial sediments, especially in meteorite-concentrated regions. Extraterrestrial spherules also have been discovered from the stratosphere and deep-sea sediments. On the basis of distributive characteristics, cosmic dust particles are classified into interplanetary dust particles and interstellar dust particles. Cosmic dust particles can be divided into cometary origin, asteroidal origin, ablation from meteorites and interstellar origin. The criteria for identifying cosmic dust particles have been established, and the origin of cosmic dust particles is discussed. (Auth.)

50-3615

Temperature distribution of Collins Ice Cap, King George Island, Antarctica.

Han, J.K., Jin, H.J., Wen, J.H., Shang, X.C., *Antarctic research,* Dec. 1995, 6(2), p.57-65, 7 refs. For Chinese original see 49-5457 or 23F-53097.

Ice temperature, Boreholes, Snow cover effect, Ice water interface, Seepage, Ice air interface, Antarctica—King George Island

Borehole temperature measurements show that Collins Ice Cap has characteristics of a temperate glacier in most parts of the accumulation area, but is characterized as a cold glacier in the ablation area. The ice temperature of the active layer is noticeably affected by seasonal variations in air temperature. The water infiltrating and warming is very significant at a depth of 30 m; the snow cover also has an effect on temperature distribution. The data reveal that the ice temperature in deep layers is at the freezing point: the temperature varies widely in the vicinity (10-20 m) of Little Dome. (Auth. mod.)

50-3616

New approach to the dynamics of hydrogen bond network in liquid water.

Matsumoto, M., Ohmine, I., *Journal of chemical physics,* Feb. 15, 1996, 104(7), p.2705-2712, 28 refs.

Water structure, Supercooling, Molecular structure, Hydrogen bonds, Defects, Molecular energy levels, Models, Latticed structures, Thermodynamics

50-3617

Assessment of the use of deicing salts. [Bewertung des Streusalzverbrauchs]

Breitenstein, J., *Straße und Autobahn,* Feb. 1996, 47(2), p.68-73, In German. 1 ref.

Road maintenance, Ice control, Salting, Logistics, Cost analysis, Seasonal variations, Forecasting, Models

50-3618

Effects of enhanced UV-B radiation on the growth of dwarf shrubs in a subarctic heathland.

Johanson, U., Gehrke, C., Björn, L.O., Callaghan, T.V., *Functional ecology,* Oct. 1995, 9(5), p.713-719, 37 refs.

Plant ecology, Ecosystems, Subarctic landscapes, Ultraviolet radiation, Solar radiation, Radiation absorption, Plant tissues, Damage, Growth, Photochemical reactions, Simulation

50-3619

Biological treatment of waste water containing glycols from de-icing agents.

Nitschke, L., Wagner, H., Metzner, G., Wilk, A., Huber, L., *Water research,* Mar. 1996, 30(3), p.644-648, 5 refs.

Aircraft icing, Ice removal, Solutions, Polymers, Meltwater, Waste disposal, Water treatment, Sludges, Degradation, Temperature effects, Microbiology, Environmental protection

50-3620

Last Scottish ice-sheet: facts and speculative discussion.

Sissons, J.B., *Boreas*, Mar. 1, 1981, 10(1), p.1-17, 71 refs.

DLC QE696.B66

Pleistocene, Paleoclimatology, Ice sheets, Glaciation, Glacial geology, Glacier oscillation, Quaternary deposits, Geochronology, Radioactive age determination, Accuracy, Theories, United Kingdom

50-3621

Terrigenous sand in Labrador Sea hemipelagic sediments and paleoglacial events on Baffin Island over the last 100,000 years.

Fillon, R.H., Miller, G.H., Andrews, J.T., *Boreas*, Mar. 1, 1981, 10(1), p.107-124, 67 refs.

DLC QE696.B66

Pleistocene, Oceanography, Marine deposits, Sedimentation, Stratigraphy, Icebergs, Calving, Ice rafting, Sands, Drill core analysis, Geochronology, Correlation, Labrador Sea

50-3622

Eemian interglacial and its termination.

Dansgaard, W., Duplessy, J.C., *Boreas*, June 1, 1981, 10(2), p.219-228, 60 refs.

DLC QE696.B66

Paleoclimatology, Pleistocene, Glacier oscillation, Quaternary deposits, Climatic changes, Marine deposits, Paleoecology, Geochronology

50-3623

Weichselian glaciation in Svalbard before 15,000 B.P.

Salvigsen, O., Nydal, R., *Boreas*, Dec. 1, 1981, 10(4), p.433-446, 43 refs.

DLC QE696.B66

Pleistocene, Glaciation, Glacier oscillation, Marine deposits, Paleoecology, Quaternary deposits, Stratigraphy, Geochronology, Radioactive age determination, Norway—Svalbard

50-3624

Weichselian chronostratigraphy and correlations.

Mörner, N.A., *Boreas*, Dec. 1, 1981, 10(4), p.463-470, 56 refs.

DLC QE696.B66

Pleistocene, Geochronology, Stratigraphy, Glaciation, Glacier oscillation, Quaternary deposits, Lacustrine deposits, Radioactive age determination, Palynology, Correlation

50-3625

Weichselian sediments containing redeposited interstadial/interglacial fossils at Slettaelva, north Norway.

Vorren, T.O., Corner, G.D., Nagy, J., *Boreas*, Dec. 1, 1981, 10(4), p.477-484, 15 refs.

DLC QE696.B66

Pleistocene, Quaternary deposits, Glacial deposits, Glacial erosion, Stratigraphy, Geochronology, Lithology, Paleoecology, Norway

50-3626

Proceedings.

Tammelin, B., ed, Säntti, K., ed, Peltola, E., ed, Neuvonen, H., ed, International Experts' Meeting on Wind Power in Icing Conditions, Helsinki, Finland, 1992. Boreas-North Wind-Pohjatuuli, Helsinki, Finnish Meteorological Institute, 1992, 370p., Refs. passim. For selected papers see 50-3627 through 50-3639.

DLC TJ820.B67

Wind power generation, Electric power, Cold weather performance, Climatology, Wind velocity, Propellers, Anemometers, Ice accretion, Ice loads, Ice cover effect, Ice prevention, Ice forecasting, Standards, Design

50-3627

Wind energy research in NEMO—research program.

Peltola, E., International Experts' Meeting on Wind Power in Icing Conditions, Helsinki, Finland, 1992. Proceedings. Boreas-North Wind-Pohjatuuli. Edited by B. Tammelin et al, Helsinki, Finnish Meteorological Institute, 1992, p.22-31, 9 refs.

DLC TJ820.B67

Wind power generation, Electric power, Cold weather performance, Propellers, Ice accretion, Ice loads, Ice air interface, Natural resources, Research projects, Finland

50-3628

Turbine blade icing model.

Finstad, K.J., Makkonen, L., International Experts' Meeting on Wind Power in Icing Conditions, Helsinki, Finland, 1992. Proceedings. Boreas-North Wind-Pohjatuuli. Edited by B. Tammelin et al, Helsinki, Finnish Meteorological Institute, 1992, p.35-42, 9 refs.

DLC TJ820.B67

Wind power generation, Electric power, Propellers, Ice accretion, Profiles, Liquid solid interfaces, Drops (liquids), Ice air interface, Air flow, Wind tunnels, Mathematical models, Computerized simulation

50-3629

Structure-independent measurement of icing.

Makkonen, L., International Experts' Meeting on Wind Power in Icing Conditions, Helsinki, Finland, 1992. Proceedings. Boreas-North Wind-Pohjatuuli. Edited by B. Tammelin et al, Helsinki, Finnish Meteorological Institute, 1992, p.43-49, 10 refs.

DLC TJ820.B67

Wind power generation, Electric power, Propellers, Ice accretion, Ice loads, Measuring instruments, Sensors, Correlation, Accuracy, Ice forecasting, Design criteria, Mathematical models

50-3630

Rime climate in Sodankylä.

Säntti, K., Tammelin, B., International Experts' Meeting on Wind Power in Icing Conditions, Helsinki, Finland, 1992. Proceedings. Boreas-North Wind-Pohjatuuli. Edited by B. Tammelin et al, Helsinki, Finnish Meteorological Institute, 1992, p.50-60, 6 refs.

DLC TJ820.B67

Climatology, Wind power generation, Cloud physics, Supercooling, Ice accretion, Altitude, Hoarfrost, Weather observations, Ice forecasting, Seasonal variations

50-3631

Icing of wind turbine rotor blades during operation.

Seifert, H., International Experts' Meeting on Wind Power in Icing Conditions, Helsinki, Finland, 1992. Proceedings. Boreas-North Wind-Pohjatuuli. Edited by B. Tammelin et al, Helsinki, Finnish Meteorological Institute, 1992, p.61-69, 8 refs.

DLC TJ820.B67

Wind power generation, Electric power, Propellers, Ice accretion, Ice solid interface, Wind velocity, Ice forecasting, Ice loads, Standards, Wind tunnels, Simulation

50-3632

Wind measurements at Ylläs broadcasting station 1982-1991.

Lehtonen, P., International Experts' Meeting on Wind Power in Icing Conditions, Helsinki, Finland, 1992. Proceedings. Boreas-North Wind-Pohjatuuli. Edited by B. Tammelin et al, Helsinki, Finnish Meteorological Institute, 1992, p.104-113, 4 refs.

DLC TJ820.B67

Towers, Antennas, Stability, Ice loads, Ice accretion, Wind velocity, Anemometers, Ice prevention, Accuracy, Design, Standards

50-3633

Development of a wind turbine system for Antarctica.

Kimura, S., International Experts' Meeting on Wind Power in Icing Conditions, Helsinki, Finland, 1992. Proceedings. Boreas-North Wind-Pohjatuuli. Edited by B. Tammelin et al, Helsinki, Finnish Meteorological Institute, 1992, p.179-187, 6 refs.

DLC TJ820.B67

Wind power generation, Electric power, Propellers, Design, Specifications, Cold weather performance, Wind factors, Antarctica—Asuka Station

A new wind turbine system to be used for producing electricity and heat for the research and daily activities at an observation station in Antarctica was developed. Based on the results of the investigation of previous tests of a wind turbine in Antarctica and the analysis of meteorological data, several new concepts were derived for designing a new turbine system. These were validated by wind tunnel and low temperature tests. The wind turbine system was set up at Asuka Station in Antarctica in 1990 and a field test was started according to the prescribed test programs. (Auth. mod.)

50-3634

Wind turbines in northern climates—Canadian experiences.

Brothers, C., International Experts' Meeting on Wind Power in Icing Conditions, Helsinki, Finland, 1992. Proceedings. Boreas-North Wind-Pohjatuuli. Edited by B. Tammelin et al, Helsinki, Finnish Meteorological Institute, 1992, p.193-202, 12 refs.

DLC TJ820.B67

Wind power generation, Electric power, Utilities, Cold weather performance, Design

50-3635

Icing test and rework of WECS for use on Lapland's fjells.

Böhmeke, G., Peltola, E., International Experts' Meeting on Wind Power in Icing Conditions, Helsinki, Finland, 1992. Proceedings. Boreas-North Wind-Pohjatuuli. Edited by B. Tammelin et al, Helsinki, Finnish Meteorological Institute, 1992, p.219-232, 6 refs.

DLC TJ820.B67

Wind power generation, Electric power, Utilities, Propellers, Ice accretion, Ice loads, Ice removal, Ice cover effect, Cold weather performance, Simulation, Design

50-3636

Evaluating the effects of icing on wind turbines.

Walsh, M., International Experts' Meeting on Wind Power in Icing Conditions, Helsinki, Finland, 1992. Proceedings. Boreas-North Wind-Pohjatuuli. Edited by B. Tammelin et al, Helsinki, Finnish Meteorological Institute, 1992, p.233-237, 3 refs.

DLC TJ820.B67

Wind power generation, Propellers, Ice accretion, Ice loads, Ice removal, Ice air interface, Fatigue (materials)

50-3637

Experiences of wind gauges used for measurements in cold regions.

Tammelin, B., International Experts' Meeting on Wind Power in Icing Conditions, Helsinki, Finland, 1992. Proceedings. Boreas-North Wind-Pohjatuuli. Edited by B. Tammelin et al, Helsinki, Finnish Meteorological Institute, 1992, p.241-261, 13 refs.

DLC TJ820.B67

Wind velocity, Anemometers, Accuracy, Ice accretion, Ice cover effect, Ice removal, Electric heating, Wind power generation, Cold weather performance

50-3638

Heated anemometer for atmospheric icing environments.

Kenyon, P.R., Blittersdorf, D.C., International Experts' Meeting on Wind Power in Icing Conditions, Helsinki, Finland, 1992. Proceedings. Boreas-North Wind-Pohjatuuli. Edited by B. Tammelin et al, Helsinki, Finnish Meteorological Institute, 1992, p.262-270, 4 refs.

DLC TJ820.B67

Wind power generation, Anemometers, Sensors, Accuracy, Cold weather performance, Ice accretion, Ice cover effect, Ice prevention, Electric heating, Design

50-3639

Rime accretion on the fells.

Tammelin, B., Säntti, K., International Experts' Meeting on Wind Power in Icing Conditions, Helsinki, Finland, 1992. Proceedings. Boreas-North Wind-Pohjatuuli. Edited by B. Tammelin et al, Helsinki, Finnish Meteorological Institute, 1992, p.281-283.

DLC TJ820.B67

Wind power generation, Propellers, Ice accretion, Hoarfrost, Ice loads, Seasonal variations

50-3640

Gravitational enrichment of $^{84}Kr/^{36}Ar$ ratios in polar ice caps: a measure of firn thickness and accumulation temperature.

Craig, H., Wiens, R.C., *Science,* Mar. 22, 1996, 271(5256), p.1708-1710, 10 refs.

Ice sheets, Chemical composition, Firn stratification, Ice temperature, Antarctica, Greenland

50-3641

Research on the glaciation of the Larsemann Hills, East Antarctica.

Li, S.K., *Antarctic research (Chinese edition),* 1995, 7(4), p.7-16, In Chinese with English summary. 29 refs.

Ice sheets, Ice cover thickness, Glaciation, Glacial geology, Paleoclimatology, Antarctica—Prydz Bay, Antarctica—Larsemann Hills

The Larsemann Hills are ice free and cover an area of approximately 200 km^2 on the Ingrid Christensen Coast. The hills had been covered by ice as early as Early Oligocene, and the ice sheet was thickest in the Late Oligocene. Since the Miocene the ice sheet has begun to retreat and decrease in thickness. The glaciation scale of the Quaternary is far inferior to the Tertiary. The thickness of the ice sheet exceeds 170 m and the margin thickens about 30 km at 18 ka. The time of deglaciation and exposed rocky land has been estimated at 10 ka. The islets of the Larsemann Hills were ice free by 6.5 ka, and the rate of retreat was 2-3 m/a. By 5.0 ka, 50% of the hills were exposed and ice was retreating at 1.0-1.5 m/a. After 5.0 ka the rate of retreat did not exceed 0.8-1.0 m/a up to its present position. (Auth. mod.)

50-3642

Vertical and seasonal variations in biomass of ice algae in the vicinity of Zhongshan Station, Antarctica.

He, J.F., Chen, B., *Antarctic research (Chinese edition),* 1995, 7(4), p.53-64, In Chinese with English summary. Refs. p.63-64.

Sea ice, Ice cover thickness, Algae, Biomass, Antarctica—Zhongshan Station

The ice algae communities at three sites near Zhongshan Station were monitored from Apr. to Dec. 1992; the maximum ice thickness was 1.74 m in Nov. Two or 3 cm of brown layers occurred in the bottom ice in late Apr. and Nov., with highest chlorophyll *a* values of 88.3 and 2810 mg/m^3, respectively. The comparing cell numbers were 3.5×10^6 and 1.21×10^8 cells/l. The maximum integrated chlorophyll *a* value was 59.7 mg/m^2 in Nov., never exceeding 6 mg/m^2 before mid Oct. Most of the biomass occurred in the bottom ice and more than 95% of it was concentrated in the bottom 15 cm ice layer during bloom. The dominant diatoms included *Nitzschia lecointei, N. barkleyi* and *N. cylindrus* in the fall, and *Amphiprora kjellmanii, Berkeleya rutilans,* and *N. lecointei* in spring. Results show that the composition of dominant species of ice algae and the biomass in austral spring were similar to these of other fast ice sites in East Antarctica, but very different from those of the subantarctic regions. (Auth. mod.)

50-3643

Residual entropy of ice: a manifestation of the fractional exclusion statistics in real three-dimensional space.

Ihm, J.S., *Journal of physics A,* Jan. 7, 1996, 29(1), p.L1-L7, 20 refs.

Ice physics, Thermodynamics, Molecular structure, Molecular energy levels, Hydrogen bonds, Stability, Statistical analysis

50-3645

Morphology and paleoenvironmental significance of Quaternary sand veins, sand wedges, and composite wedges, Tuktoyaktuk Coastlands, western arctic Canada.

Murton, J.B., *Journal of sedimentary research A,* Jan. 1996, 66(1), p.17-25, 49 refs.

Geocryology, Pleistocene, Arctic landscapes, Soil structure, Permafrost physics, Permafrost indicators, Ice wedges, Sands, Thermal stresses, Soil formation, Stratification, Canada—Northwest Territories—Tuktoyaktuk Coastlands

50-3646

Sediment inclusion events during needle ice growth: a laboratory investigation of the role of soil moisture and temperature fluctuations.

Branson, J., Lawler, D.M., Glen, J.W., *Water resources research,* Feb. 1996, 32(2), p.459-466, 40 refs.

Soil mechanics, Sediment transport, Soil erosion, Stratification, Soil freezing, Ice needles, Ice growth, Heat flux, Temperature effects, Soil water migration, Ice solid interface, Simulation

50-3647

Comment on "The episodic acidification of Adirondack lakes during snowmelt" by Douglas A. Schaefer et al.

Davies, T.D., Tranter, M., *Water resources research,* Feb. 1996, 32(2), p.491-493, 5 refs. For pertinent paper see 45-224.

Limnology, Lake water, Water chemistry, Snow hydrology, Snowmelt, Runoff, Water pollution, Chemical properties, Statistical analysis, Correlation, Accuracy

50-3648

Numerical simulation of land-breeze-induced snowbands along the western shore of Lake Michigan.

Ballentine, R.J., *Monthly weather review,* Nov. 1982, 110(11), p.1544-1553, 8 refs.

Precipitation (meteorology), Snowfall, Fronts (meteorology), Lake effects, Air flow, Turbulent boundary layer, Mathematical models, Simulation, Weather forecasting, United States—Michigan, Lake

50-3649

Reaction probabilities of $ClONO_2$ and N_2O_5 on polar stratospheric cloud materials.

Hanson, D.R., Ravishankara, A.R., *Journal of geophysical research,* Mar. 20, 1991, 96(D3), p.5081-5090, 51 refs.

Polar atmospheres, Cloud physics, Polar stratospheric clouds, Cloud dissipation, Heterogeneous nucleation, Aerosols, Ice vapor interface, Monomolecular films, Doped ice, Simulation, Simulation

The reaction probabilities, γ, of $ClONO_2$ and N_2O_5 on ice and nitric acid trihydrate (NAT) surfaces were determined, using reactant concentrations that are typical of the lower stratosphere, and pertinent to both arctic and antarctic atmospheres, by measuring the first-order reactant loss rate coefficients over the substrate located on the walls of a fast-flow reactor. Reactants were detected using chemical ionization mass spectrometry, a sensitive technique which allows the use of low reactant concentrations. An ice surface will be converted into a less reactive HNO_3-doped ice surface in a relatively short time, and arguments are presented that this surface consisted of a NAT layer. The large differences between these results and previous measurements can be attributed to the relatively large reactant concentrations used in the previous work. The major findings of this work for polar stratospheric chlorine activation are: an efficient loss of $ClONO_2$ on pure ice surfaces, a very rapid rate for the reaction $ClONO_2$ + HCl on NAT surfaces, and the fact that pure ice surfaces will become "passivated" when coated with one monolayer of NAT crystal. (Auth. mod.)

50-3650

Atmospheric bromine in the Arctic.

Berg, W.W., Sperry, P.D., Rahn, K.A., Gladney, E.S., *Journal of geophysical research,* Aug. 20, 1983, 88(C11), p.6719-6736, 56 refs.

Polar atmospheres, Marine meteorology, Atmospheric composition, Air pollution, Aerosols, Sampling, Neutron activation analysis, Seasonal variations, Air water interactions

50-3651

Problems in paleogeography and stratigraphy of the cold Warta stage in Poland. [Problemy paleogeografii i stratygrafii zimnego piętra warty w Polsce]

Klatkowa, H., ed, Acta geographica Lodziensia, No. 65, Łódź, Łódzkie Towarzystwo Naukowe, 1993, 286p., In Polish with extensive English summaries. Refs. passim. For individual papers see 50-3652 through 50-3669.

DLC QE501.4.P3 P744 1993

Stratigraphy, Quaternary deposits, Pleistocene, Glaciation, Glacial deposits, Moraines, Glacial till, Poland

50-3652

Warta Glaciation (stage) within the Widawka drainage basin and the Bełchatów mine. [Zlodowacenie Warty (piętro) w dorzeczu widawki i w kopalni Bełchatów]

Baraniecka, M.D., Problemy paleogeografii i stratygrafii zimnego piętra Warty w Polsce (Problems of paleogeography and stratigraphy of the cold Warta stage in Poland). Edited by H. Klatkowa, Łódź, Łódzkie Towarzystwo Naukowe, 1993, p.7-17, In Polish with English summary. 69 refs.

DLC QE501.4.P3 P744 1993

Quaternary deposits, Paleoclimatology, Stratigraphy, Glaciation, Glacial deposits, River basins, Drainage, Poland

50-3653

Changes in the lithology and pedology of tills from the Warta Glaciation in the Bełchatów mine. [Zmiany litologiczne i pedologiczne w glinach zwałowych zlodowacenia Warty w kopalni Bełchatów]

Baraniecka, M.D., Konecka-Betley, K., Problemy paleogeografii i stratygrafii zimnego piętra Warty w Polsce (Problems of paleogeography and stratigraphy of the cold Warta stage in Poland). Edited by H. Klatkowa, Łódź, Łódzkie Towarzystwo Naukowe, 1993, p.19-33 + fold. tables, In Polish with English summary. 29 refs.

DLC QE501.4.P3 P744 1993

Glacial till, Ice wedges, Stratigraphy, Soil science, Soil formation, Poland

50-3654

Organic deposits at the bottom and top of sediments suggested to be Wartian at the Bełchatów mine. [Utwory organiczne w spągu i stropie osadów uznawanych za Warciańskie w kopalni Bełchatów]

Goździk, J., Balwierz, Z., Problemy paleogeografii i stratygrafii zimnego piętra Warty w Polsce (Problems of paleogeography and stratigraphy of the cold Warta stage in Poland). Edited by H. Klatkowa, Łódź, Łódzkie Towarzystwo Naukowe, 1993, p.49-72 + 2 fold. diagrams, In Polish with English summary. 40 refs.

DLC QE501.4.P3 P744 1993

Sediments, Glacial deposits, Palynology, Pollen, Organic soils, Poland

50-3655

Glaciofluvial sedimentation in the vicinity of Warka during the Warta Glaciation. [Sedymentacja glacifluwialna w okresie zlodowacenia Warty w okolicach Warki]

Grzybowski, K., Problemy paleogeografii i stratygrafii zimnego piętra Warty w Polsce (Problems of paleogeography and stratigraphy of the cold Warta stage in Poland). Edited by H. Klatkowa, Łódź, Łódzkie Towarzystwo Naukowe, 1993, p.73-76, In Polish with English summary. 5 refs.

DLC QE501.4.P3 P744 1993

Outwash, Sedimentation, Glacial deposits, Geomorphology, Glacial geology, Glacial erosion, Poland—Warka

50-3656

Cold Warta stage in the light of palynological investigations. [Zimne piętro Warty w świetle badań palinologicznych]

Jastrzębska-Mamełka, M., Problemy paleogeografii i stratygrafii zimnego piętra Warty w Polsce (Problems of paleogeography and stratigraphy of the cold Warta stage in Poland). Edited by H. Klatkowa, Łódź, Łódzkie Towarzystwo Naukowe, 1993, p.79-87, In Polish with English summary. 20 refs.

DLC QE501.4.P3 P744 1993

Organic soils, Tundra vegetation, Palynology, Pleistocene, Fossils, Poland

50-3657

Morphological-paleogeographical features of the Warta Glaciation relief in the Rawka River lobe between the Bzura and Pilica rivers. [Cechy morfologiczno-paleogeograficzne rzeźby glacjalnej zlodowacenia Warty w lobie Rawki między Bzurą a Pilicą]

Klajnert, Z., Problemy paleogeografii i stratygrafii zimnego piętra Warty w Polsce (Problems of paleogeography and stratigraphy of the cold Warta stage in Poland). Edited by H. Klatkowa, Łódź, Łódzkie Towarzystwo Naukowe, 1993, p.89-97, In Polish with English summary. 21 refs.

DLC QE501.4.P3 P744 1993

Tectonics, Meltwater, Glaciation, Ice cover, Glacial deposits, Ablation, Glacial geology, Poland—Bzura River, Poland—Pilica River, Poland—Rawka River

50-3658

Some features of the Warta glacigenic deposits in central Poland. [Niektóre cechy glacigenicznych osadów Warty w środkowej Polsce]

Klatkowa, H., Problemy paleogeografii i stratygrafii zimnego piętra Warty w Polsce (Problems of paleogeography and stratigraphy of the cold Warta stage in Poland). Edited by H. Klatkowa, Łódź, Łódzkie Towarzystwo Naukowe, 1993, p.99-140 + 1 foldout drawing, In Polish with English summary. Refs. p.124-126.

DLC QE501.4.P3 P744 1993

Glacial deposits, Glacial till, Luminescence, Sediments, Poland

50-3659

Comments on glacistatic structures and their morphological expression in the Warta Glaciation zone of central and western Poland. [Uwagi o strukturach glacistatycznych i ich morfologicznym wyrazie w strefie zlodowacenia warciańskiego Polski środkowej i zachodniej]

Klatkowa, H., Problemy paleogeografii i stratygrafii zimnego piętra Warty w Polsce (Problems of paleogeography and stratigraphy of the cold Warta stage in Poland). Edited by H. Klatkowa, Łódź, Łódzkie Towarzystwo Naukowe, 1993, p.141-166, In Polish with English summary. Refs. p.162-164.

DLC QE501.4.P3 P744 1993

Glacial geology, Glacial deposits, Moraines, Glacial till, Quaternary deposits, Tectonics, Poland

50-3660

Glacial genesis of the high terraces of the Lower Liswarta River. [Glacjalna geneza wysokich teras dolnej Liswarty]

Kobojek, S., Przybył, R., Problemy paleogeografii i stratygrafii zimnego piętra Warty w Polsce (Problems of paleogeography and stratigraphy of the cold Warta stage in Poland). Edited by H. Klatkowa, Łódź, Łódzkie Towarzystwo Naukowe, 1993, p.167-174, In Polish with English summary. 11 refs.

DLC QE501.4.P3 P744 1993

Glacial geology, Geomorphology, Terraces, Outwash, Glacial deposits, Poland

50-3661

Stratigraphic setting and paleogeography of the Warta Glaciation in northeastern Poland. [Pozycja stratygraficzna i paleogeografia zlodowacenia Warty w północno-wschodniej Polsce]

Krupiński, K.M., Marks, L., Problemy paleogeografii i stratygrafii zimnego piętra Warty w Polsce (Problems of paleogeography and stratigraphy of the cold Warta stage in Poland). Edited by H. Klatkowa, Łódź, Łódzkie Towarzystwo Naukowe, 1993, p.175-183, In Polish with English summary. 26 refs.

DLC QE501.4.P3 P744 1993

Stratigraphy, Palynology, Pleistocene, Glacial till, Sediments, Glacial deposits, Glaciation, Poland

50-3662

Percentage of local rocks in fluvioglacial deposits in central Poland. [Udział skał lokalnych w utworach wodnolodowcowych środkowej Polski]

Krzemiński, T., Swierczewska, A., Uchman, J., Problemy paleogeografii i stratygrafii zimnego piętra Warty w Polsce (Problems of paleogeography and stratigraphy of the cold Warta stage in Poland). Edited by H. Klatkowa, Łódź, Łódzkie Towarzystwo Naukowe, 1993, p.185-206 + 3 fold. charts, In Polish with English summary. Refs. p.203-204.

DLC QE501.4.P3 P744 1993

Glacial deposits, Rocks, Lithology, Pleistocene, Quaternary deposits, Moraines, Poland

50-3663

Complex of deposits from the Warta Glaciation against a background of Pleistocene deposits in the central part of the Mazury lake district. [Kompleks osadów zlodowacenia Warty na tle osadów plejstoceńskich w centralnej części Pojezierza Mazurskiego]

Lisicki, S., Problemy paleogeografii i stratygrafii zimnego piętra Warty w Polsce (Problems of paleogeography and stratigraphy of the cold Warta stage in Poland). Edited by H. Klatkowa, Łódź, Łódzkie Towarzystwo Naukowe, 1993, p.207-213 + 1 fold. diagr., In Polish with English summary. 10 refs.

DLC QE501.4.P3 P744 1993

Pleistocene, Glacial deposits, Glacial till, Swamps, Lacustrine deposits, Quaternary deposits, Stratigraphy, Poland

50-3664

Chronostratigraphy of Warta loesses and correlation with glacial deposits in Poland. [Chronostratygrafia lessów Warciańskich oraz ich korelacja z osadami glacjalnymi w Polsce]

Maruszczak, H., Problemy paleogeografii i stratygrafii zimnego piętra Warty w Polsce (Problems of paleogeography and stratigraphy of the cold Warta stage in Poland). Edited by H. Klatkowa, Łódź, Łódzkie Towarzystwo Naukowe, 1993, p.215-226, In Polish with English summary. 28 refs.

DLC QE501.4.P3 P744 1993

Stratigraphy, Correlation, Glacial deposits, Loess, Oxygen isotopes, Poland

50-3665

Preliminary results of TL datings of Warta Glaciation deposits in the region of the northern part of the Silesian Lowland. [Wstępne wyniki datowań TL osadów zlodowacenia Warty na obszarze północnej części Niziny Śląskiej]

Olszak, I.J., Fedorowicz, S., Jereczek, K., Problemy paleogeografii i stratygrafii zimnego piętra Warty w Polsce (Problems of paleogeography and stratigraphy of the cold Warta stage in Poland). Edited by H. Klatkowa, Łódź, Łódzkie Towarzystwo Naukowe, 1993, p.227-231 + 1 foldout chart, In Polish with English summary. 3 refs.

DLC QE501.4.P3 P744 1993

Glacial deposits, Glaciation, Age determination, Luminescence, Glacial till, Poland—Silesia

50-3666

Formation mechanism of the marginal zone of the Warta ice sheet in the vicinity of Biard near / Łuków. [Mechanizm kształtowania strefy marginalnej lądolodu Warciańskiego w okolicy Biard koło / Łukowa]

Terpiłowski, S., Problemy paleogeografii i stratygrafii zimnego piętra Warty w Polsce (Problems of paleogeography and stratigraphy of the cold Warta stage in Poland). Edited by H. Klatkowa, Łódź, Łódzkie Towarzystwo Naukowe, 1993, p.233-237, In Polish with English summary. 9 refs.

DLC QE501.4.P3 P744 1993

Ground ice, Ice formation, Ice melting, Geomorphology, Outwash, Drainage, Poland

50-3667

Record of Warta processes in the base of the mountain Ner River valley. [Zapis procesów Warciańskich w podłożu doliny górnego Neru]

Turkowska, K., Problemy paleogeografii i stratygrafii zimnego piętra Warty w Polsce (Problems of paleogeography and stratigraphy of the cold Warta stage in Poland). Edited by H. Klatkowa, Łódź, Łódzkie Towarzystwo Naukowe, 1993, p.239-263, In Polish with French summary. 28 refs.

DLC QE501.4.P3 P744 1993

Valleys, Rivers, Mountains, Moraines, Glacial deposits, Glacial geology, Tectonics, Sedimentation, Limnology, Poland—Ner River

50-3668

Warta Glaciation deposits within the non-glaciated zone in the Polesie Lubelskie. [Osady zlodowacenia Warty w strefie ekstraglacjalnej na Polesiu Lubelskim]

Wojtanowicz, J., Problemy paleogeografii i stratygrafii zimnego piętra Warty w Polsce (Problems of paleogeography and stratigraphy of the cold Warta stage in Poland). Edited by H. Klatkowa, Łódź, Łódzkie Towarzystwo Naukowe, 1993, p.265-278, In Polish with English summary. 9 refs.

DLC QE501.4.P3 P744 1993

Glacial deposits, Ice cover, Stratigraphy, Lithology, Grain size, Palynology, Tundra, Luminescence, Age determination, Lacustrine deposits, Poland—Polesie Lubelskie

50-3669

Extent of the Warta Glaciation deposits in the northern foreland of the Lublin upland near Dęblin. [Zasięg osadów zlodowacenia Warty na północnym przedpolu wyżyny Lubelskiej koło Dęblina]

Zarski, M., Problemy paleogeografii i stratygrafii zimnego piętra Warty w Polsce (Problems of paleogeography and stratigraphy of the cold Warta stage in Poland). Edited by H. Klatkowa, Łódź, Łódzkie Towarzystwo Naukowe, 1993, p.279-286, In Polish with English summary. 13 refs.

DLC QE501.4.P3 P744 1993

Ice cover, Age determination, Moraines, Glacial geology, Geomorphology, Glacial deposits, Meltwater, Poland—Dęblin

50-3670

Contribution to the hydrological and hydrochemical response of mountain basins.

Babiaková, G., Palkovič, D., Bodiš, D., *Ekológia,* 1994, 13(1), p.43-62, With Slovakian summary. 14 refs.

River basins, Air pollution, Aerosols, Snow hydrology, Snowmelt, Snow impurities, Ion density (concentration), Runoff, Seasonal variations, Hydrogeochemistry, Simulation

50-3671

Description of the Martian polar cap breeze.

Fernández, W., *Earth, moon and planets,* 1995, 70(1-3), p.183-191, 12 refs.

Mars (planet), Wind (meteorology), Atmospheric circulation, Polar atmospheres, Extraterrestrial ice, Ice sheets, Ice cover effect, Ice air interface, Ice edge, Turbulent boundary layer, Topographic effects, Temperature gradients

50-3672

Numerical simulation of the Martian polar cap breeze.

Fernández, W., *Earth, moon and planets,* 1995, 70(1-3), p.193-205, 21 refs.

Mars (planet), Wind (meteorology), Polar atmospheres, Atmospheric circulation, Extraterrestrial ice, Ice sheets, Ice cover effect, Ice edge, Turbulent boundary layer, Temperature gradients, Ice air interface, Mathematical models

50-3673

Ice-nucleation properties of various bacterial species.

Kiprianova, E.A., Bakhanova, R.A., Smirnov, V.V., Maksimov, V.S., Boiko, O.I., Tovstenko, L.M., *Applied biochemistry and microbiology,* Sep.-Oct. 1995, 31(5), p.439-442, Translated from Prikladnaia biokhimiia i mikrobiologiia. 8 refs.

Microbiology, Ecology, Bacteria, Ice nuclei, Ice formation, Heterogeneous nucleation, Classifications, Temperature effects, Freezing points

50-3675

Zero-velocity deicer spreaders clear more roadway for less.

Banasiak, D., *Roads & bridges,* Dec. 1995, 33(12), p.28-29.

Road maintenance, Winter maintenance, Ice control, Snow removal, Salting, Mechanical properties, Sediment transport, Velocity, Cost analysis

50-3676

Geometry and energy calculations of the HS-III polyhedral gas hydrate framework.

Kosiakov, V.I., Shestakov, V.A., *Journal of structural chemistry,* Nov. 1995, 36(3), p.445-450, Translated from Zhurnal strukturnoi khimii. 9 refs.

Clathrates, Ice physics, Hydrates, Gas inclusions, Ice vapor interface, Phase transformations, Hydrogen bonds, Molecular structure, Deformation, Latticed structures, Thermodynamic properties, Geochemistry

50-3677

Energetics of framework formation in cubic clathrate hydrates.

Kosiakov, V.I., Shestakov, V.A., *Journal of structural chemistry,* Nov. 1995, 36(3), p.451-457, Translated from Zhurnal strukturnoi khimii. 21 refs.

Clathrates, Hydrates, Gas inclusions, Hydrogen bonds, Latticed structures, Molecular structure, Molecular energy levels, Phase transformations, Ice physics, Ice vapor interface, Thermodynamic properties

50-3678

New laser plasma source for extreme-ultraviolet lithography.

Jin, F., Richardson, M., *Applied optics,* Sep. 1, 1995, 34(25), p.5750-5760, 24 refs.

Cryogenics, Semiconductors (materials), Manufacturing, Lasers, Ice physics, Ice optics, Radiation absorption, Ice erosion, Ablation, Steam, Films, X ray analysis, Spectra

50-3679

Exceptional storm and its effects in the Canadian High Arctic.

Cogley, J.G., McCann, S.B., *Arctic and alpine research,* Feb. 1976, 8(1), p.105-110, 6 refs.

Precipitation (meteorology), Storms, Rain, Hydrography, Glacial hydrology, Glacial lakes, Lake bursts, Flooding, Canada—Northwest Territories—Ellesmere Island

50-3680

Streamflow generation in a headwater basin on the Precambrian Shield.

Wels, C., Taylor, C.H., Cornett, R.J., Lazerte, B.D., *Hydrological processes,* Apr.-June 1991, 5(2), p.185-199, 32 refs.

Hydrogeochemistry, Watersheds, Ground water, Stream flow, Snowmelt, Meltwater, Runoff, Hydrography, Subsurface drainage, Water transport

50-3681

Arctic kelp community in the Alaskan Beaufort Sea.

Dunton, K.H., Reimnitz, E., Schonberg, S., *Arctic,* Dec. 1982, 35(4), p.465-484, With French and Russian summaries. 60 refs.

Marine biology, Marine geology, Littoral zone, Nutrient cycle, Ocean bottom, Sedimentation, Rocks, Gravel, Ice cover effect, Biomass, Algae, Ecosystems, Beaufort Sea

50-3682

Records of climatic change in the Canadian Arctic: towards calibrating oxygen isotope data with geothermal data.

Beltrami, H., Taylor, A.E., *Global and planetary change,* Dec. 1995, 11(3), p.127-138, 38 refs.

Climatology, Climatic changes, Air temperature, Boreholes, Ice cores, Soil temperature, Geothermometry, Temperature variations, Profiles, Oxygen isotopes, Isotope analysis, Correlation, Canada—Northwest Territories—Ellesmere Island

50-3683

Large eddy simulation of the turbulent flow in a marine convective boundary layer with snow.

Rao, G.S., Agee, E.M., *Journal of the atmospheric sciences,* Jan. 1, 1996, 53(1), p.86-100, 38 refs.

Marine atmospheres, Turbulent boundary layer, Turbulent flow, Precipitation (meteorology), Convection, Cloud physics, Snowfall, Ice crystal growth, Phase transformations, Lake effects, Buoyancy, Statistical analysis, Mathematical models

50-3684

Microphysical and optical properties of cirrus and contrails: cloud field study on 13 October 1989.

Gayet, J.F., Febvre, G., Brogniez, G., Chepfer, H., Renger, W., Wendling, P., *Journal of the atmospheric sciences,* Jan. 1, 1996, 53(1), p.126-138, 37 refs.

Clouds (meteorology), Cloud physics, Optical properties, Aerial surveys, Condensation trails, Lidar, Radiometry, Backscattering, Attenuation, Ice crystal optics, Ice crystal size

50-3685

SNOWTAMs.

Hamm, J., *Flight training,* Jan. 1996, 8(1), p.45-47.

Aircraft landing areas, Runways, Warning systems, Snowfall, Snow accumulation, Snowdrifts, Safety

50-3686

Predicting winter weather.

Williams, J., *Flight training,* Dec. 1995, 7(12), p.46-48.

Aircraft, Cold weather operation, Safety, Snowstorms, Weather forecasting, Synoptic meteorology, Warning systems

50-3687

Eking out icing info.

Hamm, J., *Flight training,* Nov. 1995, 7(11), p.46-48.

Aircraft icing, Safety, Ice detection, Ice forecasting, Air temperature, Freezing points, Sounding, Weather observations

50-3688

Ground deicing.

George, F., *Flight training,* Apr. 1995, 7(4), p.56-58.

Aircraft icing, Ground ice, Ice removal, Solutions, Chemical ice prevention, Winter maintenance, Safety, Ice detection, Education

50-3689

Automated wind tunnel measurements.

Stumpf, P., Barrett, W., Popplewell, N., Shah, A.H., Balakrishnan, S., *Experimental techniques,* July-Aug. 1994, 18(4), p.34-38, 11 refs.

Power line icing, Stability, Vibration, Strain tests, Ice air interface, Turbulent flow, Ice cover effect, Simulation, Wind tunnels, Strain measuring instruments, Computer applications

50-3690

Recovery target: Prudhoe Bay heavy crude oil.

Oil & gas journal, Feb. 13, 1995, 93(7), p.32.

Petroleum industry, Research projects, Crude oil, Oil recovery, United States—Alaska—Prudhoe Bay

50-3691

Ice detection for turboprop aircraft.

Render, P.M., Jenkinson, L.R., Caves, R.E., Pitfield, D.E., *Flight safety digest,* Nov. 1995, 14(11), United Kingdom. Civil Aviation Authority. Report No.95007, 40p., 11 refs.

Aircraft icing, Ice detection, Sensors, Warning systems, Ice prevention, Ice removal, Safety

50-3692

Arctic algal communities in the region of the Nuvuk Islands, northeastern Hudson Bay, Canada.

Keats, D.W., Green, J.M., Hooper, R.G., *Naturaliste canadien,* 1989, 116(1), p.53-59, With French summary. 9 refs.

Marine biology, Algae, Ecosystems, Littoral zone, Ocean bottom, Sampling, Classifications, Distribution, Canada—Northwest Territories—Hudson Bay

50-3693

Physical properties governing groundwater flow in a glacial till catchment.

Hinton, M.J., Schiff, S.L., English, M.C., *Journal of hydrology,* Feb. 1993, 142(1-4), p.229-249, 46 refs.

Hydrogeochemistry, Ground water, Water transport, Hydraulics, Stream flow, Watersheds, Glacial deposits, Podsol, Saturation, Seasonal variations

50-3694

Tidal displacement of sea ice observed at Nisi-noura Cove on East Ongul Island, Antarctica.

Sato, T., Okano, K., Sawagaki, T., Enomoto, H., NIPR Symposium on Antarctic Geosciences, Proceedings, Tokyo, National Institute of Polar Research, Oct. 1995, p.43-48, 3 refs.

Sea ice distribution, Tides, Antarctica—Nishino-ura Cove

Vertical displacements of sea ice accompanied by the ocean tide were measured at Nishino-ura Cove on East Ongul I. and compared with the ocean tide observed by a pressure type tide gauge installed at the same cove. The displacements of sea ice were measured at two places which were respectively located at 20 m (P20M) and 60 m (P60M) offshore of bench mark BM No.1040. The displacement at P20M, where the sea ice is close to the fast ice, showed strong nonlinear behavior in both amplitude and phase compared with the ocean tide measured by the bottom-pressure gauge; the displacement at P60M was very consistent with the observed ocean tide. According to the 6 measurements made at P60M from May to Dec., 1993, the differences in amplitude are less than 5% as represented by the ratio of the displacement of the sea ice to the ocean tide. (Auth.)

50-3695

Marine fossils of 30-40 ka in raised beach deposits, and Late Pleistocene glacial history around Lützow-Holm Bay, East Antarctica.

Igarashi, A., Harada, N., Moriwaki, K., NIPR Symposium on Antarctic Geosciences, Proceedings, Tokyo, National Institute of Polar Research, Oct. 1995, p.219-229, Refs. p.228-229.

Glacial geology, Marine geology, Fossils, Ice sheets, Oscillations, Glacial deposits, Antarctica—Flatvaer Islands, Antarctica—Lützow-Holm Bay

Radiocarbon ages of fossil marine organisms in raised beach deposits along the Sôya Coast are clearly classified into two groups of 3-8 ka and 33-42 ka by means of Tandetron Accelerator Mass Spectrometry. The older fossils are recognized on the Flatvaer Is. and the northernmost part of Langhovde, which are separated from the present ice sheet margin by a drowned glacial trough below 500 m. Some of the older molluscan fossils as well as the younger ones retain their living form *in situ.* These facts together with the deep continental shelf and a small amount of isostatic uplift of the Holocene raised beaches lead to the following conclusions for the region: marine transgression took place in the last interstadial and in the Holocene; major deglaciation took place by the last interstadial in the region; expansion of the ice sheet during the Last Glacial Maximum was slight; and the sea-level during the last interstadial was probably higher than that estimated from foraminiferal $\delta^{18}O$ records in deep-sea sediments. (Auth.)

50-3696

Ground temperature regimes and frost heave activity in the vicinity of Syowa Station, East Antarctica.

Sawagaki, T., NIPR Symposium on Antarctic Geosciences, Proceedings, Tokyo, National Institute of Polar Research, Oct. 1995, p.239-249, 8 refs.

Frost heave, Soil freezing, Seasonal freeze thaw, Permafrost, Periglacial processes, Antarctica—East Ongul Island, Antarctica—Hinode, Cape

Ground temperature and frost heave activity were continuously measured during 1992-94 at two sites on East Ongul I. (Site EO) and Cape Hinode (Site CH). The maximum thickness of the active layer was 60-80 cm at Site CH and more than 80 cm at Site EO. Diurnal freeze-thaw layers occurred above 10 cm depth at both sites in summer. In addition, a "zero-curtain" zone appeared below 10 cm depth. Isotherm lines of 0°C suggest that seasonal freezing in late summer at both sites was two-sided, occurring both downward from the ground surface and upward from the permafrost table. Diurnal frost heaves which frequently occurred at Site EO were caused by the diurnal freeze-thaw cycles above 10 cm depth. The maximum heave originated from the growth of the surficial needle ice. Seasonal frost

heave amounting to 3 mm was observed at Site EO. This heave seems to have resulted from ice segregation near the permafrost table. (Auth.)

50-3697

Alkali metal constraints on the origin of salts in lakes and ponds from the McMurdo Dry Valleys, Antarctica.

Takamatsu, N., Kato, N., Matsumoto, G.I., Torii, T., NIPR Symposium on Antarctic Geosciences, Proceedings, Tokyo, National Institute of Polar Research, Oct. 1995, p.250-257, Refs. p.256-257.

Limnology, Lake ice, Ice composition, Geochemistry, Antarctica—McMurdo Dry Valleys

Alkali metals in lake, pond, and ice samples of the McMurdo Dry Valleys were studied to clarify the origins of dissolved salts and to estimate their evolutional history. The contents of Li, Rb and Cs varied widely, ranging from 0.30 ppb to 390 ppm, 0.06 to 514 ppb and 0.001 to 90.9 ppb, respectively. The low rare alkali metal contents with high Ef_m values of the pond waters and ice samples in the Labyrinth imply that dissolved salts are mainly derived from atmospheric fallout. The decrease of Ef_m values with increasing Cl content of the Labyrinth pond waters suggests that rare alkali metals are removed from waters during freeze and evaporative concentrations. The bottom waters of Lakes Fryxell and Bonney may originate from trapped seawater influenced by water-rock interaction. The extremely high Ef_m values of Don Juan Pond water and the bottom water in Lake Vanda can be explained by the contribution of deep ground waters. (Auth.)

50-3698

Some effects of conductor twisting on galloping.

Richardson, A.S., Jr., *IEEE transactions on power apparatus and systems,* Mar.-Apr. 1980, 99(2), p.811-821, 16 refs.

Transmission lines, Power line icing, Ice accretion, Glaze, Stability, Oscillations, Ice cover effect, Ice air interface, Wind factors, Damping, Tensile properties, Simulation, Analysis (mathematics)

50-3699

Propagation of sound above a finite layer of snow.

Nicolas, J., Berry, J.L., Daigle, G.A., *Acoustical Society of America. Journal,* Jan. 1985, 77(1), p.67-73, 17 refs.

Snow acoustics, Wave propagation, Acoustic measurement, Snow cover effect, Snow air interface, Boundary layer, Ice solid interface, Porosity, Stratification, Theories, Analysis (mathematics), Simulation

50-3700

High strength concrete—freeze/thaw testing and cracking.

Jacobsen, S., Gran, H.C., Sellevold, E.J., Bakke, J.A., *Cement and concrete research,* Dec. 1995, 25(8), p.1775-1780, 14 refs.

Concrete strength, Concrete durability, Concrete admixtures, Freeze thaw tests, Frost action, Degradation, Crack propagation, Microstructure, Laboratory techniques

50-3701

SEM observations of the microstructure of frost deteriorated and self-healed concretes.

Jacobsen, S., Marchand, J., Hornain, H., *Cement and concrete research,* Dec. 1995, 25(8), p.1781-1790, 24 refs.

Concrete durability, Concrete strength, Mechanical properties, Microstructure, Crack propagation, Frost action, Degradation, Saturation, Freeze thaw tests, Scanning electron microscopy

50-3702

Particulate organic matter composition in Terra Nova Bay (Ross Sea, Antarctica) during summer 1990.

Fabiano, M., Povero, P., Danovaro, R., *Antarctic science,* Mar. 1996, 8(1), p.7-13, Refs. p.12-13.

Marine biology, Sea water, Suspended sediments, Chemical composition, Biomass, Plankton, Decomposition, Organic nuclei, Sampling, Ecosystems, Antarctica—Terra Nova Bay

Particulate organic matter was collected in the coastal waters of Terra Nova Bay during the Oceanographic Campaign of the Italian Antarctic Research Programme in summer 1990. Particulate matter composition was analyzed for organic carbon and nitrogen, carbohydrates, proteins, lipids, nucleic acids (DNA and RNA) and ATP. A vertical stratification was evident in the study area, which resulted from prior melting of the pack ice. Suspended organic matter in the mixed layer and below the mixed layer differed in quantitative and qualitative composition. Except for ATP, all the biochemical components showed higher concentrations in the mixed layer than in the deeper waters. The particulate organic matter in Terra Nova Bay was mostly detrital and of algal origin. (Auth.)

50-3703

Biogenic brominated and iodinated organic compounds in ponds of the McMurdo Ice Shelf, Antarctica.

Schall, C., Heumann, K.G., De Mora, S.J., Lee, P.A., *Antarctic science,* Mar. 1996, 8(1), p.45-48, 18 refs.

Limnology, Microbiology, Ice shelves, Ponds, Meltwater, Biomass, Bacteria, Ecosystems, Ice water interface, Geochemistry, Hydrocarbons, Sampling, Antarctica—Bratina Island

During Jan. 1994 seven meltwater ponds on the McMurdo Ice Shelf were investigated for their content of biogenic iodinated and brominated volatile hydrocarbons. This is the first time that 1,2-dibromoethane has been detected as a biogenic substance in the environment. In contrast to many other aquatic systems where CH_3I is found to be the most volatile iodine compound, CH_2I_2 showed the highest concentration in all ponds, falling in the range of 5-20 ng/l. In 3 of the 7 ponds investigated, CH_2ClI was the second most abundant iodinated substance. $CHBr_3$ usually exhibited concentrations in the range of 2.5-8.6 ng/l. $BrCH_2CH_2Br$, not previously observed as a biogenic compound, was found to have concentrations similar to those of bromoform and even exceeded the bromoform content in two ponds as well as the CH_2Br_2 content in all ponds. (Auth. mod.)

50-3704

Evidence for regional climate change in the recent evolution of a high latitude pro-glacial lake.

Webster, J., Hawes, I., Downes, M., Timperley, M., Howard-Williams, C., *Antarctic science,* Mar. 1996, 8(1), p.49-59, 35 refs.

Climatology, Limnology, Climatic changes, Glacial lakes, Icebound lakes, Water level, Ice melting, Biomass, Geochemistry, Stratification, Plankton, Sampling, Ecosystems, Antarctica—Wilson, Lake

Lake Wilson, a perennially ice-capped, deep (>100 m) lake at 80°S in southern Victoria Land, was investigated in Jan. 1993. Water chemistry and physical structure showed 3 distinct layers: an upper c. 35 m mixed layer of low salinity, moderately turbid water; a less turbid mid layer 20 m thick of slightly higher salinity and supersaturated with oxygen; and a deep 20 m brackish layer with anoxic conditions in the lower 5 m. Extreme supersaturation of N_2O (up to 400 times air saturation) together with high nitrate concentration were recorded in the deep layer. Phytoplankton biomass and photosynthetic activity were confined to the upper mixed layer. The band of supersaturated dissolved oxygen located at 40-55 m appears to represent a relict layer from when the lake level was lower. The evidence from a comparison of profiles between 1975 and 1993 suggests that Lake Wilson has risen 25 m since 1975, synchronous with a period of lake level rise in the McMurdo Dry Valleys lakes to the north at 77°S. Geochemical diffusion models indicate that Lake Wilson evaporated to a smaller brine lake about 1000 yrs BP, which also fits the pattern shown by the McMurdo Dry Valleys lakes. Climate changes influencing lake levels have thus covered a wide area of southern Victoria Land. (Auth.)

50-3705

NERC Arctic research station.

Cox, N., *NERC news,* Jan. 1996, No.34, p.23.

Low temperature research, Stations, Research projects, Norway—Svalbard

50-3706

Aviation meteorology unscrambled: for VFR and IFR operations/certificates and ratings. Chapter XII. Icing.

McCool, K.B., Gainesville, TX, Kenneth B. McCool, 1992, p.12/1-12/16, 5th edition.

DLC TL556.M19 1992

Aircraft icing, Ice accretion, Ice storms, Ice forecasting, Weather forecasting, Meteorological factors, Supercooled clouds

50-3707

Avalanche prediction for persistent snow slabs.

Jamieson, J.B., Calgary, Alberta, University of Calgary, 1995, 258p., Ph.D. thesis. Refs. p.231-245.

Snow cover stability, Snow strength, Snow stratigraphy, Snow deterioration, Slope stability, Avalanche forecasting, Avalanche formation, Avalanche triggering

50-3708

Wintertime polar low over the eastern Weddell Sea (Antarctica): a study with AVHRR, TOVS, SSM/I and conventional data.

Heinemann, G., *Meteorology and atmospheric physics,* 1996, 58(1-4), p.83-102, 44 refs.

Polar atmospheres, Marine atmospheres, Marine meteorology, Atmospheric circulation, Atmospheric pressure, Atmospheric disturbances, Spaceborne photography, Antarctica—Weddell Sea

The baroclinic development of an intense meso-scale cyclone (MC) over the Weddell Sea near the antarctic coast close to the Georg von Neumayer Station (GvN) during the period Apr. 26-28, 1989 was studied by means of satellite and conventional data. ECMWF analyses, radiosonde data and surface observations were used together with AVHRR data, TOVS and SSM/I retrievals for the description of the synoptic and subsynoptic environment associated with the development of the MC. The MC had a diameter of about 500 km, a lifetime of about 40 hours and reached the intensity of a polar low. Wind speeds up to 19 m/s (with gusts up to 24 m/s) were recorded at GvN as the MC approached on 27 Apr. and remained quasi-stationary for about 24 hours. Its development took place in baroclinic conditions of strong low-level cold air advection close to the sea ice front. The genesis of the MC seemed to be triggered by a 500 hPa short-wave trough and a resemblance to a baroclinic development at a boundary layer front was observed. Low-level thickness fields from TOVS data reflected the baroclinic structure of the MC, but gradients were relatively weak. Wind speed retrievals from SSM/I data did not allow a full analysis of the wind field structure for this case, as they were limited to ice-free ocean. (Auth. mod.)

50-3709

Supercell simulations with simple ice parameterization.

Tartaglione, N., Buzzi, A., Fantini, M., *Meteorology and atmospheric physics,* 1996, 58(1-4), p.139-149, 17 refs.

Cloud physics, Storms, Atmospheric disturbances, Thunderstorms, Ice crystal collision, Precipitation (meteorology), Computerized simulation

50-3710

Snow survey bulletin & water supply forecast, March 1, 1996, Yukon Territory.

Canada. Indian and Northern Affairs. Water Resources Division, Whitehorse, 1996, 27p.

Snow surveys, Runoff forecasting, Snow depth, Snow water equivalent, Stream flow, Canada—Yukon Territory

50-3711

Ice thickness data, winter 1993-1994. Final issue.

Ottawa, Environment Canada, Atmospheric Environment Service, Ice Climatology Services, Ice Centre, 1996, 91p., In English and French. 1 ref.

Ice surveys, Ice cover thickness, Snow depth, Snow ice interface, Freezeup, Ice breakup, Canada

50-3712

Central Appalachian periglacial geomorphology: a field excursion guidebook.

Clark, G.M., ed, Agronomy series, No.120, University Park, Pennsylvania State University, Aug. 1992, 248p., Refs. p.192-212.

Geological surveys, Glacial geology, Glacial deposits, Periglacial processes, Soil surveys, Topographic surveys, Geomorphology, Landforms, Geochronology, Paleoclimatology, United States—Appalachian Mountains

50-3713

Moisture-based model for calculating daily changes in seasonal soil frost depth.

Ryerson, C.C., MP 3786, *Publications in climatology,* 1979, 32(2), 115p., Refs. p.61-69. Includes a 3.5" high-density diskette.

Soil freezing, Frozen ground thermodynamics, Frost penetration, Frost forecasting, Seasonal freeze thaw, Computer programs, Mathematical models, Statistical analysis

50-3714

Cretaceous to recent extension in the Bering Strait region, Alaska.

Dumitru, T.A., et al, *Tectonics,* June 1995, 14(3), p.549-563, 63 refs.

Marine geology, Tectonics, Geological surveys, Geologic processes, Earth crust, Radioactive isotopes, Isotope analysis, Geochronology, United States—Alaska—Bering Strait

50-3715

Proton dynamics in supercooled water by molecular dynamics simulations and quasielastic neutron scattering.

Di Cola, D., Deriu, A., Sampoli, M., Torcini, A., *Journal of chemical physics,* Mar. 15, 1995, 104(11), p.4223-4233, 44 refs.

Water structure, Molecular structure, Molecular energy levels, Proton transport, Self diffusion, Supercooling, Thermodynamic properties, Computerized simulation, Neutron scattering, Spectra

50-3716

DEM corrected ERS-1 SAR data for snow monitoring in alpine regions.

Guneriussen, T., Johnsen, H., Sand, K., *SPIE—The International Society of Optical Engineering. Proceedings,* 1994, Vol.2314, Multispectral and microwave sensing of forestry, hydrology, and natural resources. Edited by E. Mougin et al, p.584-595, 22 refs.

DLC G70.39.M85

Remote sensing, Spacecraft, Radiometry, Synthetic aperture radar, Snow cover distribution, Snow water equivalent, Snowmelt, Wet snow, Snow optics, Dielectric properties, Backscattering, Correlation

50-3717

Some results from geocoding and calibration of ERS-1 SAR FD images in mountainous areas.

Johnsen, H., Lauknes, I., Guneriussen, T., *SPIE—The International Society of Optical Engineering. Proceedings,* 1994, Vol.2314, Multispectral and microwave sensing of forestry, hydrology, and natural resources. Edited by E. Mougin et al, p.596-604, 9 refs.

DLC G70.39.M85

Remote sensing, Spaceborne photography, Synthetic aperture radar, Radiometry, Sensor mapping, Image processing, Wet snow, Water content, Backscattering, Correlation

50-3718

Snow mass in boreal forests derived from a modified passive microwave algorithm.

Foster, J.L., Chang, A.T.C., Hall, D.K., *SPIE—The International Society of Optical Engineering. Proceedings,* 1994, Vol.2314, Multispectral and microwave sensing of forestry, hydrology, and natural resources. Edited by E. Mougin et al, p.605-617, 25 refs.

DLC G70.39.M85

Remote sensing, Snow surveys, Snow depth, Spaceborne photography, Radiometry, Albedo, Vegetation factors, Forest canopy, Scattering, Accuracy, Mathematical models

50-3719

Natural ice nucleus measurement under high supersaturation.

Mizuno, H., Fukuta, N., *Meteorological Society of Japan. Journal,* Dec. 1995, 73(6), p.1115-1122, With Japanese summary. 44 refs.

Clouds (meteorology), Cloud physics, Ice nuclei, Ice vapor interface, Supersaturation, Ice crystal growth, Heterogeneous nucleation, Sampling, Thermal diffusion, Temperature effects, Statistical analysis

50-3720

Laser ablation of organic molecules from frozen matrices.

Belov, M.E., Alimpiev, S.S., Malinskiĭ, V.V., Nikiforov, S.M., Derrick P.J., *Rapid communications in mass spectrometry,* 1995, 9(14), p.1431-1436, 21 refs.

Frozen liquids, Cryogenics, Hydrocarbons, Lasers, Ablation, Decomposition, Cavitation, Ice spectroscopy, Ionization, Spectra, Luminescence

50-3721

Heavy metal concentrations in peat profiles from the high Arctic.

Headley, A.D., *Science of the total environment,* Jan. 5, 1996, Vol.177, p.105-111, 19 refs.

Soil pollution, Air pollution, Aerosols, Peat, Mosses, Metals, Tundra soils, Sampling, Environmental tests, Ecology, Origin, Norway—Spitsbergen

50-3722

Ice streams in Antarctica: transverse instability of gravity driven flow.

Minale, M., Astarita, G., *Journal of non-Newtonian fluid mechanics,* Feb. 1996, 62(2-3), p.155-174, 37 refs.

Glaciology, Glacier flow, Ice mechanics, Unsteady flow, Viscous flow, Rheology, Gravity, Fluid dynamics, Mathematical models, Topographic effects

The authors analyze the gravity driven flow of ice down the slopes of Antarctica. Ice streams are almost invariably observed, and these could be explained by a transverse instability of the gravity driven flow of ice. In Newtonian fluids, the longitudinal instability is guaranteed to be the predominant one, hence any transverse instability must be due to the non-Newtonian character of ice. The authors show that the second-order Coleman-Noll fluid and the lower-convected Maxwell fluid could indeed show a predominant instability in the transverse direction, and they advance two speculations: first, that the predominant instability is either the longitudinal or the transverse one, and second, that the latter may be the case only for fluids which exhibit a non-zero second normal stress difference in shear flow. (Auth. mod.)

50-3723

Short-term variations in atmospheric CO_2 at Ny-Ålesund, Spitsbergen, during spring and summer.

Engardt, M., Holmén, K., Heintzenberg, J., *Tellus,* Feb. 1996, 48B(1), p.33-43, 27 refs.

Climatology, Marine atmospheres, Air water interactions, Atmospheric composition, Sampling, Carbon dioxide, Turbulent diffusion, Geochemical cycles, Seasonal variations, Norway—Spitsbergen

50-3724

First results of $^{15}N/^{14}N$ ratios in nitrate from alpine and polar ice cores.

Freyer, H.D., Kobel, K., Delmas, R.J., Kley, D., Legrand, M.R., *Tellus,* Feb. 1996, 48B(1), p.93-105, 48 refs.

Climatology, Air pollution, Aerosols, Sedimentation, Ice sheets, Ice cores, Snow accumulation, Snow impurities, Firn, Isotope analysis, Geochemical cycles, Greenland—Summit, Antarctica—Adélie Coast, Antarctica—Charlie, Dome, Antarctica—Amundsen-Scott Station

Isotopic analyses of nitrogen were performed in nitrate from alpine and polar snow and ice. Nitrate from recent alpine ice cores showed similar $^{15}N/^{14}N$ ratios and seasonal variations as continental rain nitrate. Nitrate from recent Summit (Greenland) precipitation also showed similar isotope composition to European rain but, in ice cores, increasing $^{15}N/^{14}N$ ratios with decreasing nitrate concentrations are observed as a function of depth until about the year 1950, which is when anthropogenic emissions of nitrogen oxides started to increase rapidly in the Northern Hemisphere. In recent antarctic ice from the South Pole, nitrate concentrations are nearly the same as in the measured Greenland ice up to the year 1967, where the record for South Pole ice stops. No conclusions on recent nitrate pollution in the Antarctic could be made from this poorly documented core. Measured isotopic ratios for the Greenland ice core for the preanthropogenic period correspond to one antarctic ice core (D47); both cores show similar snow accumulation rates. Isotopic ratios for other antarctic ice cores are different from the Greenland ratio; a clear relationship is found between the isotopic composition and the snow accumulation rate, with heavier ratios observed with decreasing accumulation rates. (Auth. mod.)

50-3725

Self healing of high strength concrete after deterioration by freeze/thaw.

Jacobsen, S., Sellevold, E.J., *Cement and concrete research,* Jan. 1996, 26(1), p.55-62, 19 refs.

Concrete strength, Concrete durability, Frost resistance, Freeze thaw tests, Compressive properties, Resonance, Degradation, Permeability, Saturation, Saturation, Laboratory techniques, Accuracy

50-3726

Back to basics: world climatic types.

Salmond, J., Smith, C.G., *Weather,* Jan. 1996, 51(1), p.11-18, 13 refs.

Climatology, Classifications, Distribution, Climatic changes, Global change, Statistical analysis, Long range forecasting

50-3727

Water movement in wet snow.

Gray, J.M.N.T., *Royal Society of London. Philosophical transactions,* Mar. 15, 1996, 354(1707), p.465-500, 36 refs.

Snow hydrology, Wet snow, Metamorphism (snow), Phase transformations, Water transport, Hygroscopic water, Ice water interface, Snow air interface, Meltwater, Saturation, Snow permeability, Capillarity, Mathematical models

50-3728

Use of the SHE hydrological modelling system to investigate basin response to snowmelt at Reynolds Creek, Idaho.

Bathurst, J.C., Cooley, K.R., *Journal of hydrology,* Feb. 1996, 175(1-4), p.181-211, 33 refs.

Snow hydrology, Watersheds, Snowmelt, Snow heat flux, Snow air interface, Runoff forecasting, Hydrography, Mathematical models, United States—Idaho

50-3729

ARNO rainfall-runoff model.

Todini, E., *Journal of hydrology,* Feb. 1996, 175(1-4), p.339-382, 59 refs.

Precipitation (meteorology), Watersheds, Hydrologic cycle, Ground water, Flood forecasting, Runoff forecasting, Snow hydrology, Snowmelt, Meltwater, Water transport, Snow water equivalent, Mathematical models

50-3730

Proceedings.

Glacier Bay Science Symposium, 3rd, Glacier Bay National Park and Preserve, Gustavus, AK, Sep. 15-18, 1993, Engstrom, D.R., ed, Anchorage, AK, U.S. Department of the Interior, National Park Service, 1995, 310p., Refs. passim. For selected papers see 50-3731 through 50-3753.

DLC QH105.A4G58 1993

Geological surveys, Glaciation, Glacial geology, Glacial deposits, Glacier oscillation, Moraines, Marine geology, Nutrient cycle, Plant ecology, Revegetation, Vegetation patterns

50-3731

Role of physical sciences in global change research at Glacier Bay National Park and Preserve.

Powell, R.D., Glacier Bay Science Symposium, 3rd, Gustavus, AK, Sep. 15-18, 1993. Proceedings. Edited by D.R. Engstrom, Anchorage, AK, U.S. Department of the Interior, National Park Service, 1995, p.1-4, 2 refs.

Research projects, Geological surveys, Oceanographic surveys, Glacial geology, Marine geology, Paleoclimatology, Global change, United States—Alaska—Glacier Bay National Park

50-3732

Bedrock-geologic and geophysical research in Glacier Bay National Park and Preserve: unique opportunities of local-to-global significance.

Brew, D.A., Horner, R.B., Barnes, D.F., Glacier Bay Science Symposium, 3rd, Gustavus, AK, Sep. 15-18, 1993. Proceedings. Edited by D.R. Engstrom, Anchorage, AK, U.S. Department of the Interior, National Park Service, 1995, p.5-14, 22 refs.

Research projects, Geological surveys, Geophysical surveys, Tectonics, Geochronology, United States—Alaska—Glacier Bay National Park

50-3733

Glacier fluctuations and sediment yields interpreted from seismic-reflection profiles in Johns Hopkins Inlet, Glacier Bay, Alaska.

Cai, J.K., Powell, R.D., Glacier Bay Science Symposium, 3rd, Gustavus, AK, Sep. 15-18, 1993. Proceedings. Edited by D.R. Engstrom, Anchorage, AK, U.S. Department of the Interior, National Park Service, 1995, p.15-23, 21 refs.

Geological surveys, Seismic surveys, Glaciation, Glacial geology, Glacier oscillation, Glacial deposits, Moraines, Marine geology, Marine deposits, Bottom sediment, Geochronology, United States—Alaska—Glacier Bay

50-3734

Characteristics of suspended particulate matter and sedimentation of organic carbon in Glacier Bay fjords.

Cowan, E.A., Glacier Bay Science Symposium, 3rd, Gustavus, AK, Sep. 15-18, 1993. Proceedings. Edited by D.R. Engstrom, Anchorage, AK, U.S. Department of the Interior, National Park Service, 1995, p.24-28, 14 refs.

Glacial geology, Glacial deposits, Outwash, Sediment transport, Marine geology, Marine deposits, Suspended sediments, Bottom sediment, Plankton, Nutrient cycle, United States—Alaska—Glacier Bay

50-3735

Effects of ice-proximal sediment dynamics on the stability of Muir Glacier, Glacier Bay, Alaska.

Hunter, L.E., Powell, R.D., MP 3787, Glacier Bay Science Symposium, 3rd, Gustavus, AK, Sep. 15-18, 1993. Proceedings. Edited by D.R. Engstrom, Anchorage, AK, U.S. Department of the Interior, National Park Service, 1995, p.29-37, 19 refs.

Glacial geology, Glacial deposits, Glacier oscillation, Glacier flow, Calving, Moraines, Outwash, Marine geology, Marine deposits, Bottom sediment, Sediment transport, United States—Alaska—Glacier Bay

Recent studies have shown that water depth at tidewater termini affects calving rates, and therefore glacier mass balance and terminus stability. If sediment dynamics at tidewater termini influence grounding-line water depth, they may also moderate glacier dynamics. Grounding-line water depths are governed by glacial and marine processes that interact during the formation of morainal bank depocenters. Morainal bands can fluctuate tens of meters in height within a few weeks. Such rapid changes are important when interpreting glacier behavior where termini fluctuations may represent a dynamic response to sedimentary processes that are independent of climatic forcing. Sedimentologic investigations in upper Muir Inlet have focused on quantitatively assessing sediment budgets in the ice-proximal environment. Monitoring of Muir Glacier morainal bank has included repeated bathymetric mapping, sediment trap studies, bottom grab sampling, and glacier and iceberg sampling. These investigations provide detailed information on process dynamics and sediment budgets in order to determine the complex relationships between ice-proximal marine processes and glacier response. These relationships must be understood to interpret recent changes in the dynamics of Muir Glacier, where a century of retreat has been succeeded by quasi-stability as calving rates declined in response to rapid grounding-line deposition.

50-3736

Influence of sedimentation, accumulation to total area ratio, and channel geometry on the advance of a fjord-type glacier.

Motyka, R.J., Post, A., Glacier Bay Science Symposium, 3rd, Gustavus, AK, Sep. 15-18, 1993. Proceedings. Edited by D.R. Engstrom, Anchorage, AK, U.S. Department of the Interior, National Park Service, 1995, p.38-45, 14 refs.

Glacier surveys, Glacier oscillation, Glacier flow, Glacial deposits, Moraines, Calving, Marine geology, Sediment transport, United States—Alaska—Taku Glacier

50-3737

Climatic controls on glacier mass balance in Glacier Bay National Park and Preserve, Alaska.

Hunter, L.E., Powell, R.D., MP 3788, Glacier Bay Science Symposium, 3rd, Gustavus, AK, Sep. 15-18, 1993. Proceedings. Edited by D.R. Engstrom, Anchorage, AK, U.S. Department of the Interior, National Park Service, 1995, p.46-54, 22 refs.

Glacier surveys, Glacier oscillation, Glacier mass balance, Glacier flow, Glacial meteorology, Glacial deposits, Moraines, Calving, Snow line, Climatic factors, United States—Alaska—Glacier Bay National Park

The importance of sediment dynamics on controlling the behavior of tidewater termini is becoming clear. However, climatic forcing on glaciers in Glacier Bay National Park and Preserve needs to be addressed to evaluate its relative importance. Little climatologic data exist for the region, so a preliminary assessment of climate forcing has been performed using data collected by the Icefield Ranges Research Project (IRRP), meteorologic observations from near sea level weather stations, and a reconnaissance mass balance study using snowlines determined from aerial photographs of Glacier Bay. The emphasis is on the climatic regimes that influence glaciers flowing into Tarr and Muir Inlets. Precipitation in Glacier Bay is introduced directly from the Gulf of Alaska. Heavy precipitation on the coastal flanks of the Fairweather Range and a precipitation shadow extending across Glacier Bay and the Takhinsha Mountains are expected; but IRRP observations, local glacier mass balance investigations, and regional wind patterns indicate that this concept is oversimplified. High peaks along the crest of the Fairweather Range are an effective barrier to storms moving NE from the Gulf of Alaska that cause storms to be deflected and enter Glacier Bay from the south. Asynchronous response of glacier behavior to climatic forcing observed by meteorologic trends and reconnaissance glacier mass balance investigations indicate that tidewater termini in Glacier Bay are insensitive to climatic forcing. Morainal bank sediment dynamics at Grand Pacific and Muir Glaciers appear to modulate calving speeds and termini behavior by controlling grounding-line water depth, which at least over short periods of time is more important than climatic forcing.

50-3738

Thirty years of glacier process studies at Burroughs Glacier, Wachusett Inlet, Glacier Bay, Alaska.

Mickelson, D.M., Ham, N.R., Glacier Bay Science Symposium, 3rd, Gustavus, AK, Sep. 15-18, 1993. Proceedings. Edited by D.R. Engstrom, Anchorage, AK, U.S. Department of the Interior, National Park Service, 1995, p.55-65, 38 refs.

Glacier surveys, Glaciation, Glacial geology, Glacier oscillation, Glacial deposits, Glacial till, Revegetation, United States—Alaska—Glacier Bay

50-3739

Ablation of debris-covered ice and the formation of pitted outwash plains at Burroughs Glacier, southeastern Alaska.

Syverson, K.M., Mickelson, D.M., Glacier Bay Science Symposium, 3rd, Gustavus, AK, Sep. 15-18, 1993. Proceedings. Edited by D.R. Engstrom, Anchorage, AK, U.S. Department of the Interior, National Park Service, 1995, p.66-74, 21 refs.

Glacial deposits, Glacial meteorology, Glacier surfaces, Glacier ablation, Ice air interface, Outwash, Moraines, Sediment transport, United States—Alaska—Glacier Bay

50-3740

Driving stress, hydraulic head and landform genesis at the southeastern Burroughs Glacier.

Gaffield, S.G., Mickelson, D.M., Glacier Bay Science Symposium, 3rd, Gustavus, AK, Sep. 15-18, 1993. Proceedings. Edited by D.R. Engstrom, Anchorage, AK, U.S. Department of the Interior, National Park Service, 1995, p.75-81, 15 refs.

Glaciation, Glacial geology, Glacial deposits, Glacial hydrology, Subglacial drainage, Glacier beds, Geological surveys, Topographic surveys, United States—Alaska—Glacier Bay

50-3741

Micromorphology of basal till, Burroughs Glacier, Alaska.

Ham, N.R., Mickelson, D.M., Glacier Bay Science Symposium, 3rd, Gustavus, AK, Sep. 15-18, 1993. Proceedings. Edited by D.R. Engstrom, Anchorage, AK, U.S. Department of the Interior, National Park Service, 1995, p.82-86, 17 refs.

Glacial geology, Glacial erosion, Glacial deposits, Glacier beds, Glacial till, Soil structure, Microstructure, United States—Alaska—Glacier Bay

50-3742

Repeat photography and landscape change at Glacier Bay, 1879-1993.

Lawrence, D.B., Noble, M.G., Howe, R.E., Field, W.O., Glacier Bay Science Symposium, 3rd, Gustavus, AK, Sep. 15-18, 1993. Proceedings. Edited by D.R. Engstrom, Anchorage, AK, U.S. Department of the Interior, National Park Service, 1995, p.87-95, 14 refs.

Glacier surveys, Glacier oscillation, Topographic surveys, Photogrammetric surveys, Photographic techniques, United States—Alaska—Glacier Bay

50-3743

Mechanisms of primary succession at Glacier Bay: implications for present and future vegetation patterns.

Chapin, F.S., III, Fastie, C.L., Walker, L.R., Sharman, L.C., Glacier Bay Science Symposium, 3rd, Gustavus, AK, Sep. 15-18, 1993. Proceedings. Edited by D.R. Engstrom, Anchorage, AK, U.S. Department of the Interior, National Park Service, 1995, p.96-100, 12 refs.

Glaciation, Glacier melting, Revegetation, Vegetation patterns, Introduced plants, Plant ecology, United States—Alaska—Glacier Bay

50-3744

Calibration of a forest gap model for Glacier Bay: exploring multiple successional pathways.

Weishampel, J.F., Shugart, H.H., Glacier Bay Science Symposium, 3rd, Gustavus, AK, Sep. 15-18, 1993. Proceedings. Edited by D.R. Engstrom, Anchorage, AK, U.S. Department of the Interior, National Park Service, 1995, p.101-110, 16 refs.

Plant ecology, Revegetation, Vegetation patterns, Introduced plants, Biomass, United States—Alaska—Glacier Bay

50-3745

Evaluating the consequences of species interactions during primary succession at Glacier Bay, Alaska.

Fastie, C.L., Glacier Bay Science Symposium, 3rd, Gustavus, AK, Sep. 15-18, 1993. Proceedings. Edited by D.R. Engstrom, Anchorage, AK, U.S. Department of the Interior, National Park Service, 1995, p.111-114, 11 refs.

Plant ecology, Revegetation, Vegetation patterns, Introduced plants, United States—Alaska—Glacier Bay

50-3746

Stable isotopic investigation of nitrogen dynamics at Glacier Bay, Alaska.

Hobbie, E.A., Macko, S.A., Shugart, H.H., Glacier Bay Science Symposium, 3rd, Gustavus, AK, Sep. 15-18, 1993. Proceedings. Edited by D.R. Engstrom, Anchorage, AK, U.S. Department of the Interior, National Park Service, 1995, p.115-121, 16 refs.

Plant ecology, Revegetation, Vegetation patterns, Nutrient cycle, Isotope analysis, United States—Alaska—Glacier Bay

50-3747

Nitrogen fixers in early primary succession on surfaces of two ages at Wachusett Inlet, Glacier Bay National Park and Preserve, Alaska.

Kohls, S.J., Lawrence, D.B., Glacier Bay Science Symposium, 3rd, Gustavus, AK, Sep. 15-18, 1993. Proceedings. Edited by D.R. Engstrom, Anchorage, AK, U.S. Department of the Interior, National Park Service, 1995, p.122-128, 16 refs.

Glacial till, Soil chemistry, Plant ecology, Revegetation, Vegetation patterns, Nutrient cycle, United States—Alaska—Glacier Bay

50-3748

Structure and composition of a forested beach ridge chronosequence on the Yakutat foreland, Alaska.

Shephard, M.E., Glacier Bay Science Symposium, 3rd, Gustavus, AK, Sep. 15-18, 1993. Proceedings. Edited by D.R. Engstrom, Anchorage, AK, U.S. Department of the Interior, National Park Service, 1995, p.129-136, 15 refs.

Beaches, Plant ecology, Revegetation, Vegetation patterns, United States—Alaska—Yakutat

50-3749

How unique is primary plant succession at Glacier Bay.

Walker, L.R., Glacier Bay Science Symposium, 3rd, Gustavus, AK, Sep. 15-18, 1993. Proceedings. Edited by D.R. Engstrom, Anchorage, AK, U.S. Department of the Interior, National Park Service, 1995, p.137-146, 24 refs.

Soil surveys, Plant ecology, Revegetation, Vegetation patterns, Nutrient cycle, United States—Alaska—Glacier Bay

50-3750

Patterns of early lake ontogeny in Glacier Bay as inferred from diatom assemblages.

Fritz, S.C., Engstrom, D.R., Glacier Bay Science Symposium, 3rd, Gustavus, AK, Sep. 15-18, 1993. Proceedings. Edited by D.R. Engstrom, Anchorage, AK, U.S. Department of the Interior, National Park Service, 1995, p.147-153, 11 refs.

Lacustrine deposits, Limnology, Lake water, Water chemistry, Hydrogeochemistry, Nutrient cycle, Plant ecology, Paleobotany, Revegetation, Vegetation patterns, United States—Alaska—Glacier Bay

50-3751

Long-term changes in zooplankton community structure inferred from a chronosequence of lakes in Glacier Bay National Park, Alaska.

Olson, O.G., Engstrom, D.R., Fritz, S.C., Glacier Bay Science Symposium, 3rd, Gustavus, AK, Sep. 15-18, 1993. Proceedings. Edited by D.R. Engstrom, Anchorage, AK, U.S. Department of the Interior, National Park Service, 1995, p.154-163, 24 refs.

Glacial lakes, Limnology, Lacustrine deposits, Ecosystems, Ecology, Nutrient cycle, Paleoecology, United States—Alaska—Glacier Bay National Park

50-3752

International gaging station established on the Alsek River.

Deschu, N., Thompson, D., Seitz, H., Thompson, K., Glacier Bay Science Symposium, 3rd, Gustavus, AK, Sep. 15-18, 1993. Proceedings. Edited by D.R. Engstrom, Anchorage, AK, U.S. Department of the Interior, National Park Service, 1995, p.184-189, 2 refs.

Glacial rivers, River flow, Meltwater, Stream flow, Runoff, Suspended sediments, Water pollution, United States—Alaska—Glacier Bay National Park

50-3753

Qualitative successional models in Glacier Bay: a comparison of terrestrial, marine, stream, and lake ecosystems.

Sharman, L.C., Milner, A.M., Chapin, F.S., III, Engstrom, D.R., Glacier Bay Science Symposium, 3rd, Gustavus, AK, Sep. 15-18, 1993. Proceedings. Edited by D.R. Engstrom, Anchorage, AK, U.S. Department of the Interior, National Park Service, 1995, p.190-195, 20 refs.

Glaciation, Glacier melting, Ecosystems, Plant ecology, Paleoecology, Paleobotany, Revegetation, Vegetation patterns, United States—Alaska—Glacier Bay

50-3754

Description of an approach to validation.

Welsh, J.P., Koenig, G.G., MP 3789, Ground Target Modeling and Validation Conference, 6th, Houghton, MI, Aug. 1995. Proceedings. Vol.1, Houghton, Michigan Technological University, 1995, p.62-76, 2 refs.

Terrain identification, Infrared reconnaissance, Infrared photography, Environment simulation, Military research, Military equipment, Military operation, Image processing, Statistical analysis

Statistical inference and functional techniques have been used to validate a scene generation capability. This paper discusses the statistical inference approach. The statistical inference techniques have followed a stratified random block experimental design for comparison of model generated synthetic scenes to measured images. A validation approach has been used that incorporates: 1. formal experimental design (including random sampling procedures); 2. comprehensive data collection methods (including quality control and calibration); 3. physics formulations as energy balance models; and 4. statistical inference analysis and validation procedures. The scene generation capability produces synthetic infrared scenes that simulate a broad range of environment conditions. This capability can be used to generate scenes for the broad range of environment conditions and variety of targets needed to evaluate and predict system performance.

50-3755

Smart weapons operability enhancement synthetic scene generation process.

Koenig, G.G., Welsh, J.P., Wilson, J., MP 3790, *SPIE—The International Society for Optical Engineering. Proceedings,* 1995, Vol.2469, Targets and backgrounds: characterization and representation, Orlando, FL, Apr. 17-19, 1995. Edited by W.R. Watkins and D. Clement, p.254-265, 9 refs.

Terrain identification, Infrared photography, Infrared reconnaissance, Environment simulation, Computerized simulation, Image processing, Military equipment, Military operation, Military research

The Smart Weapons Operability Enhancement (SWOE) program has developed a synthetic scene generation process that incorporates formal experimental design, random sampling procedures, data collection methods, physics models, and numerically repeatable validation procedures. The SWOE synthetic scene generation procedure uses an assemblage of measurements, static and dynamic information databases, thermal and radiance models, and rendering techniques to simulate a wide range of environmental conditions. The models provide a spatial and spectral agility that permits the simulation of a wide range of sensor systems for varied environmental conditions. Comprehensive validation efforts hve been conducted for two locations: Grayling, MI, and Yuma, AZ, and for two spectral bands: shortwave (3-5 μm) and longwave (8-12 μm) IR. The intended use of the validated SWOE Process is synthetic battlefield scene generation. The users of the SWOE Process are the smart weapon system designers, developers, testers and evaluators, including developers of automatic target recognition algorithms and techniques.

50-3756

High spatial and temporal resolution database for synthetic scene generation and validation.

Bleiweiss, M.P., Cassidy, T., Scott, F., Koenig, G.G., Welsh, J.P., MP 3791, Battlefield Atmospherics Conference, White Sands Missile Range, NM, 1995, White Sands Missile Range, U.S. Army Research Laboratory, Battlefield Environment Directorate, 10p., 3 refs.

Terrain identification, Infrared photography, Infrared reconnaissance, Environment simulation, Computerized simulation, Military operation, Military equipment, Military research, Image processing

The overall objective of the Smart Weapons Operability Enhancement (SWOE) Joint Test and Evaluation (JT&E) program sponsored by the Office of the Secretary of Defense is the enhancement of smart weapons performance through an effective application of knowledge of the environment. Specifically, the two objectives of the SWOE JT&E effort are to 1) validate the SWOE scene generation process and 2) collect a selected data set for use by the DoD community. This presentation provides an overview of the high spatial and temporal resolution environmental and imagery database collected during three SWOE field programs. These field programs were conducted during the summer-fall and winter-spring transition periods at Grayling, MI and the winter-spring transition at Yuma, AZ. During the field programs, an extensive set of environmental parameters (e.g., air and soil temperature, solar and infrared fluxes, etc.) were collected at several locations over a fairly small test area. These parameters are required for synthetic scene generation and model evaluation, and have been used to investigate the "within" and "between" environmental variability. In addition to the collection of the environmental parameters, extensive infrared (IR) and millimeter wave (MMW) imagery were collected utilizing ground-based and airborne sensor systems. The IR imagery has been utilized in the validation of the SWOE generated synthetic scenes and to investigate the scene-to-scene and sensor-to-sensor thermal IR variability.

50-3757

Floating slabs for unheated buildings.

Crory, F.E., MP 3792, *New England builder,* Mar. 1987, 5(6), p.27-29.

Foundations, Concrete slabs, Gravel, Subgrade soils, Frost resistance, Frost heave, Frost penetration, Frost protection, Cold weather construction

50-3758

Experimental system for one-dimensional freezing of undisturbed soil profiles.

Johnsson, H., Thunholm, B., Lundin, L.C., *Soil technology,* 1995, Vol.7, p.319-325, 16 refs.

Soil freezing, Artificial freezing, Soil tests, Freeze thaw tests, Soil water migration, Seepage, Frozen ground thermodynamics

50-3759

Icing: assessing the risk.

Bertorelli, P., *IFR,* Nov. 1992, p.6-9.

Aircraft icing, Ice forecasting, Weather forecasting

50-3760

Role of industries and environmental effects on corrosion control in the North.

Dutta, P.K., MP 3793, Controlling Corrosion in the Northern Latitudes, Anchorage, AK, Feb. 19-21, 1996. Conference proceedings, Houston, TX, National Association of Corrosion Engineers (NACE), 1996, p.405-413, 7 refs.

Polar atmospheres, Air pollution, Water pollution, Economic development, Environmental impact, Human factors, Corrosion, Cold weather construction, Weatherproofing

The salt-laden atmosphere, the use of de-icing salt, a higher level of oxygen concentration in cold water, and sulfurous pollution from industries are several factors among many that exacerbate the corrosion problems of the Northern countries. Human activities in the Arctic and sub-Arctic areas of the North, especially the tendency toward increasing the extraction of hydrocarbon raw materials, is accompanied by increasing use of metallic components in human habitats, production and processing plants, transportation systems, and other infrastructure. These human activities produce corrosive pollutants that, after being released in the air and water, attack metallic structures. This paper discusses such corrosion problems in the North and the role of human factors, which have intensified the problem.

50-3761

Real-time ice forecasts.

Bertorelli, P., *IFR,* Apr. 1992, p.18.

Aircraft icing, Ice forecasting, Weather forecasting

50-3762

Jet-cutting as an ice-breaking aid. Preliminary report on field tests for U.S. Coast Guard.

Mellor, M., Gagnon, F., MP 3794, Hanover, NH, U.S. Army Cold Regions Research and Engineering Laboratory, Apr. 1973, 16p., 4 refs.

Lake ice, Ice cutting, Ice breaking, Hydraulic jets, Penetration tests

50-3763

Seismic reflection results from an ice island over the arctic continental shelf.

Cox, T.P., Overton, A., Mereu, R.F., *Marine geology,* 1990, Vol.93, p.193-210, 18 refs.

Ice islands, Subglacial observations, Seismic surveys, Exploration, Marine geology, Ocean bottom, Bottom sediment, Bottom topography

50-3764

Particle interaction in fjord suspended sediment.

Syvitski, J.P.M., Murray, J.W., *Marine geology,* 1981, Vol.39, p.215-242, Refs. p.239-242.

Glacial deposits, Glacial till, Outwash, Marine geology, Marine deposits, Suspended sediments, Sediment transport, Turbidity

50-3765

On the use of static GPS measurements to record the tidal responses of a small antarctic ice shelf (Hells Gate Ice Shelf, Victoria Land).

Bondesan, A., Capra, A., Gubellini, A., Tison, J.L., *Geografia fisica e dinamica quaternaria,* 1994, 17(2), p.123-129, With Italian summary. Refs. p.129.

Ice shelves, Dynamic properties, Bedrock, Bottom topography, Ice water interface, Tides, Antarctica—Hells Gate

Recent developments of GPS (Global Positioning System) technology provide a new powerful tool to study ice shelf-ocean dynamic interactions. Here the authors present results from feasibility tests on the use of static GPS measurements to locate grounding zones and study their impact on the ice shelf mechanical response. The Hells Gate ice shelf has been studied owing to its closeness to Terra Nova Bay Station and to the peculiar problems it raises for glaciologists and geophysicists. Technical and analytical problems are discussed and 5 short time lapse records from various places of the ice shelf surface are interpreted. Most of the survey stations appear to react fully hydrostatically to the tidal forcing, even during a secondary maximum of only a few cm amplitude. The most upstream station (4), located in a strait between Vegetation I. and the Northern Foothills, shows a departure from hydrostatic equilibrium in accordance with a scheme of bedrock valley side effects. (Auth. mod.)

50-3766

Equilibrium line altitude (ELA) variations recorded by Ortles-Cevedale Glaciers (Lombardy, Italy) from Little Ice Age to Present.

Pelfini, M., *Geografia fisica e dinamica quaternaria,* 1994, 17(2), p.197-206, Refs. p.205-206.

Glacier surfaces, Glacier mass balance, Height finding, Glacier oscillation, Paleoclimatology, Italy—Lombardy

50-3767

Reports on the Glaciological Survey of 1993. [Relazioni della Campagna Glaciologica 1993]

Armando, E., Smiraglia, C., Zanon, G., *Geografia fisica e dinamica quaternaria,* 1994, 17(2), p.219-273, In Italian.

Glacier surveys, Glacier oscillation, Glacier surfaces, Variations, Topographic surveys, Italy

50-3768

Average composition of clay mineral associations in the surface layer of the bottom sediments of the Arctic Ocean. [Sredniĭ sostav assotsiatsiĭ glinistykh mineralov v poverkhnostnom sloe donnykh osadkov Severnogo Ledovitogo okeana]

Levitan, M.A., Wahsner, M., Nürnberg, D., Shelekhova, E.S., *Rossiiskaia akademiia nauk. Doklady,* Sep. 1995, 344(3), p.364-366, In Russian. 14 refs.

Clay minerals, Bottom sediment, Surface properties, Arctic Ocean

50-3769

Role of the Bering Strait in controlling North Atlantic ocean circulation and climate.

Shaffer, G., Bendtsen, J., *Nature,* Jan. 27, 1994, 367(6461), p.354-357, 31 refs.

Ocean currents, Climate, Models, Pacific Ocean, Bering Strait, Arctic Ocean, North Atlantic Ocean

50-3770

High-resolution record of atmospheric CO_2 content from carbon isotopes in peat.

White, J.W.C., Ciais, P., Figge, R.A., Kenny, R., Markgraf, V., *Nature,* Jan. 13, 1994, 367(6459), p.153-156, 34 refs.

Peat, Mosses, Carbon dioxide, Isotope analysis, Ice cores, Atmospheric composition, Antarctica—Marie Byrd Land, —Beagle Channel

The understanding of how future changes in atmospheric carbon-dioxide concentrations will affect the global climate system arises in part from comparing past changes in climate and CO_2. To date, these comparisons have come mainly from ice-core data, which show a strong correlation between past atmospheric CO_2 concentration and polar temperature. A new method is presented for reconstructing atmospheric CO_2 concentration using the $^{13}C/^{12}C$ ratio ($\delta^{13}C$) in mosses and sedges in peat. The method exploits the fact that, unlike sedges and most other plants, mosses do not possess stomata, and are therefore unable to regulate their uptake of CO_2 and water. The $\delta^{13}C$ of mosses thus depends on both atmospheric CO_2 concentration and available water, and the $\delta^{13}C$ of sedges from the same peat can be used to remove the water signal. The method provides a resolution of about a decade—much higher than is possible from ice cores. Initial results for the past 14,000 years show three sharp increases in atmospheric CO_2 concentration: at 12,800 years ago, corresponding to an episode of warming in the North Atlantic region; 10,000 years ago, corresponding to the end of the Younger Dryas cold period; and 4,400 years ago, after which time modern climates were established globally. (Auth. mod.)

50-3771

Ice-age tropics revisited.

Anderson, D.M., Webb, R.S., *Nature,* Jan. 6, 1994, 367(6458), p.23-24, 5 refs.

Paleoclimatology, Fossils, Isotope analysis, Sea water, Water temperature, Models, Tropical regions

50-3772

Characteristics of applied geomorphological studies in regions with Pleistocene ice sheets. [Osobennosti prikladnykh geomorfologicheskikh issledovaniĭ v oblastiakh pleĭstotsenovogo pokrovnogo oledeneniia]

Spiridonov, A.I., *Moscow. Universitet. Vestnik. Seriia 5: Geografiia,* July-Aug. 1995, No.4, p.59-64, In Russian with English summary. 15 refs.

Geomorphology, Glacial geology, Ice cover, Glaciation, Pleistocene, Russia

50-3773

Reconstructing the climate of the Little Ice Age and its modeling. [Rekonstruktsiia klimata maloĭ lednikovoĭ epokhi i ego modelirovanie]

Kislov, A.V., Popova, V.V., *Moscow. Universitet. Vestnik. Seriia 5: Geografiia,* Sep.-Oct. 1995, No.5, p.9-16, In Russian with English summary. 26 refs.

Paleoclimatology, Air temperature, Models, Temperature variations

50-3774

Theoretical model of the transfer of radionuclides (the accident at the Siberian chemical plant). [Teoreticheskaia model' perenosa radionuklidov (avariia na Sibirskom khimicheskom kombinate)]

Belov, P.N., *Moscow. Universitet. Vestnik. Seriia 5: Geografiia,* Sep.-Oct. 1995, No.5, p.34-39, In Russian with English summary. 7 refs.

Mathematical models, Radioactive isotopes, Environmental impact, Air pollution, Radioactivity, Accidents, Russia—Siberia

50-3775

Modeling the destructive effect of an avalanche wind. [Modelirovanie razrushitel'nogo deĭstviia vozdushnoĭ volny laviny]

Bozhinskiĭ, A.N., Sukhanov, L.A., *Moscow. Universitet. Vestnik. Seriia 5: Geografiia,* Sep.-Oct. 1995, No.5, p.45-50, In Russian with English summary. 4 refs.

Avalanche wind, Avalanche modeling

50-3776

Distribution of Arctic lichens and thoughts concerning their origin.

Thomson, J.W., *Lichenologist,* [Dec.] 1995, 27(6), Papers presented in the Symposium "Alpine and Polar Lichenology" at the International Mycological Congress, Fifth, Vancouver, 15-16 Aug., 1994, p.411-416, 19 refs.

Lichens, Distribution, History

50-3777

Alpine lichens of Tasmania's south west wilderness.

Kantvilas, G., *Lichenologist,* [Dec.] 1995, 27(6), Papers presented in the Symposium "Alpine and Polar Lichenology" at the International Mycological Congress, Fifth, Vancouver, 15-16 Aug., 1994, p.433-449, 53 refs.

Lichens, Biogeography, Distribution, Mountains, Plant ecology, Australia—Tasmania

50-3778

Lichen genus *Caloplaca* in polar regions.

Søchting, U., Olech, M., *Lichenologist,* [Dec.] 1995, 27(6), Papers presented in the Symposium "Alpine and Polar Lichenology" at the International Mycological Congress, Fifth, Vancouver, 15-16 Aug., 1994, p.463-471, 16 refs.

Lichens, Plants (botany), Distribution

Extensive material of *Caloplaca* from arctic and antarctic regions has been critically examined. A list of 49 species is presented for arctic regions. They are presumed to have a more or less circumpolar distribution. Twenty-two species are listed from the antarctic region, but about ten more, probably undescribed species, are present there. About one-third of the species in the Antarctic are bipolar or widespread in cold regions; these include mainly terricolous and muscicolous species and none of them are maritime. It is assumed that migration of the bipolar or cosmopolitan species has taken place along the Andean mountain chain, whereas the maritime polar species have evolved separately in the two hemispheres. The *Caloplaca* species of the Antarctic are provisionally assigned to the following distribution types: continental antarctic, western antarctic, insul-antarctic and sub-antarctic. *Caloplaca exsecuta, C. saxicola* and *C. phaeocarpella* are recorded as new to the Antarctic. *Caloplaca johnstonii* (Dodge) Søchting & Olech, *comb. nov.*, is established as the correct name of *C. tenuis* Øvstedal. (Auth.)

50-3779

Lichen colonization and recolonization of two recently deglaciated zones in the maritime antarctic.

Valladares, F., Sancho, L.G., *Lichenologist,* [Dec.] 1995, 27(6), Papers presented in the Symposium "Alpine and Polar Lichenology" at the International Mycological Congress, Fifth, Vancouver, 15-16 Aug., 1994, p.485-493, 19 refs.

Lichens, Glacier ablation, Plant ecology, Rocks, Antarctica—South Shetland Islands, Antarctica—Livingston Island, Antarctica—Robert Island

A lichenometric study of the crustose lichen *Caloplaca sublobulata* was carried out at both Livingston and Robert Is. On the moraine of Livingston I., rock size plays an important role in lichen development, explaining most of the differences observed in the diameter of *C. sublobulata,* the number of species, and the percentage of cover among the rocks studied. On Robert I., the distance from the glacier front was associated with the lichen cover of the rocks but not with diameter of *C. sublobulata.* This homogeneous distribution of *C. sublobulata* thallus size in the Robert I. study area points to a simultaneous recolonization of the whole zone by this lichen. The lichen development on Robert I. seems to have been drastically affected by fluctuations in the persistence of snow cover following glacier front retreat. Tentative associations between ice retreat and colonization on the one hand, and changes in snow cover duration and the dynamic processes of extinction and recolonization on the other, are suggested from comparison of the two zones. (Auth.)

50-3780

Spatial pattern in communities of crustose saxicolous lichens.

Dale, M.R.T., *Lichenologist,* [Dec.] 1995, 27(6), Papers presented in the Symposium "Alpine and Polar Lichenology" at the International Mycological Congress, Fifth, Vancouver, 15-16 Aug., 1994, p.495-503, 13 refs.

Lichens, Distribution, Canada—Rocky Mountains

50-3781

Intraspecific variations of morphology and physiology of temperate to Arctic populations of *Cetaria nivalis.*

Schipperges, B., Kappen, L., Sonesson, M., *Lichenologist,* [Dec.] 1995, 27(6), Papers presented in the Symposium "Alpine and Polar Lichenology" at the International Mycological Congress, Fifth, Vancouver, 15-16 Aug., 1994, p.517-529, 52 refs.

Lichens, Geochemistry, Physiological effects, Distribution, Polar regions, Morphology

50-3782

Carbon acquisition and water relations of lichens in polar regions - potential and limitations.

Kappen, L., Sommerkorn, M., Schroeter, B., *Lichenologist,* [Dec.] 1995, 27(6), Papers presented in the Symposium "Alpine and Polar Lichenology" at the International Mycological Congress, Fifth, Vancouver, 15-16 Aug., 1994, p.531-545, 53 refs.

Lichens, Polar regions, Photosynthesis, Snow cover, Air temperature

50-3783

Short-term effects of enhanced UV-B and CO_2 on lichens at different latitudes.

Sonesson, M., Callaghan, T.V., Björn, L.O., *Lichenologist,* [Dec.] 1995, 27(6), Papers presented in the Symposium "Alpine and Polar Lichenology" at the International Mycological Congress, Fifth, Vancouver, 15-16 Aug., 1994, p.547-557, 38 refs.

Lichens, Ultraviolet radiation, Photosynthesis, Carbon dioxide

50-3784

Climate change and the ecophysiological response of Arctic lichens.

Nash, T.H., III, Olafsen, A.G., *Lichenologist,* [Dec.] 1995, 27(6), Papers presented in the Symposium "Alpine and Polar Lichenology" at the International Mycological Congress, Fifth, Vancouver, 15-16 Aug., 1994, p.559-565, 28 refs.

Climatic changes, Lichens, Physiological effects, Photosynthesis, United States—Alaska

50-3785

Rates of heave and surface rotation of periglacial frost boils in the White Mountains, California.

Wilkerson, F.D., *Physical geography,* Nov.-Dec. 1995, 16(6), p.487-502, 31 refs.

Periglacial processes, Patterned ground, Soil creep, Soil tests, Frozen ground mechanics, Frost heave, Freeze thaw cycles, Sorting, Surface structure, Classifications, Ice needles, United States—California—White Mountains

50-3786

Functional analysis of New Zealand alpine vegetation: variation in canopy roughness and functional diversity in response to an experimental wind barrier.

Smith, B., Mark, A.F., Wilson, J.B., *Functional ecology,* Dec. 1995, 9(6), p.904-912, 46 refs.

Plant ecology, Forest canopy, Vegetation patterns, Alpine landscapes, Surface roughness, Wind factors, Biogeography, Classifications, Environmental tests, Fractals, Snow fences, Snow cover effect, New Zealand—Otago

50-3787

Deformation of ice under low stresses.

Sego, D.C., Morgenstern, N.R., University of Alberta. Department of Civil Engineering. Report, Edmonton, Mar. 1982, 48p. + appends., Refs. p.39-45. For another version see 38-2088.

Ice mechanics, Rheology, Ice creep, Ice deformation, Stress concentration, Temperature effects, Strain tests, Grain size, Tensile properties, Mechanical tests

50-3788

Fracture in the compression of a brittle material—columnar grained ice.
Wu, H.C., Chang, K.J., Schwarz, J., University of Iowa. Iowa Institute of Hydraulic Research. Report No.23, Iowa City, July 1974, 24p., 13 refs.
Ice mechanics, Ice strength, Compressive properties, Mechanical tests, Cracking (fracturing), Stress concentration, Brittleness, Ice solid interface, Temperature effects

50-3789

Dielectric property of snow.
Kuroiwa, D., International Association of Hydrology. Publication No.39, Rome, [1953], p.52-63, 9 refs.
Snow physics, Snow electrical properties, Ice dielectrics, Dielectric properties, Snow impurities, Electrical measurement, Water content, Snow density

50-3790

Report on World Glacier Inventory status—December 1978.
Müller, F., Scherler, K., International Commission on Snow and Ice. Temporary Technical Secretariat for the World Glacier Inventory, Zurich, 1979, 67p., Refs. p.65-67.
Glaciology, Glacier surveys, Classifications

50-3791

Spectrophotometric determination of chloride ions in snow by absorption of polynuclear chlorobismuthate(III) ions.
Vanchikova, E.V., Palkhovskaia, I.A., Kondratenok, B.M., *Industrial laboratory,* Oct. 1995, 61(4), p.187-188, Translated from Zavodskaya laboratoriya. 1 ref.
Snow composition, Chemical analysis, Meltwater, Sampling, Ion density (concentration), Solutions, Photometry, Spectra, Environmental tests

50-3792

Cold weather operations. *Flight safety,* Aug.-Sep. 1983, 10(4), p.10-14.
DLC TL553.5.F555
Aircraft icing, Cold weather operation, Countermeasures, Ice control, Snow removal, Safety

50-3793

Winter flying. *Flight safety,* June 1985, 12(3), p.4-8.
DLC TL553.5.F555
Aircraft icing, Cold weather operation, Safety, Ice prevention, Ice control, Countermeasures

50-3794

Winter flying—helicopters. *Flight safety,* June 1985, 12(3), p.8-10.
DLC TL553.5.F555
Helicopters, Cold weather operation, Aircraft icing, Ice control, Countermeasures, Safety

50-3795

Watch out—there may be ice about! or visual checks and pilot techniques in the presence of icing conditions.
den Hertog, R., Flight Safety Foundation International Air Safety Seminar, 45th, and International Federation of Airworthiness International Conference, 22nd, Long Beach, CA, Nov. 2-5, 1992. Proceedings, Arlington, Flight Safety Foundation, 1992, p.111-120.
DLC TL553.5.F565a
Aircraft icing, Ground ice, Safety, Ice detection, Standards, Performance, Ice cover effect

50-3796

Power loss in inclement weather.
Volk, L., Flight Safety Foundation International Air Safety Seminar, 45th, and International Federation of Airworthiness International Conference, 22nd, Long Beach, CA, Nov. 2-5, 1992. Proceedings, Arlington, Flight Safety Foundation, 1992, p.238-248.
DLC TL553.5.F565a
Aircraft icing, Jet engines, Ducts, Design, Cold weather performance, Ice storms, Hail clouds, Hailstones, Damage, Standards

50-3797

Test program for aircraft ground anti-icing fluids.
Myers, B.B., Flight Safety Foundation International Air Safety Seminar, 45th, and International Federation of Airworthiness International Conference, 22nd, Long Beach, CA, Nov. 2-5, 1992. Proceedings, Arlington, Flight Safety Foundation, 1992, p.249-258.
DLC TL553.5.F565a
Aircraft icing, Ground ice, Precipitation (meteorology), Ice removal, Chemical ice prevention, Antifreezes, Cold weather performance, Standards, Tests, Safety

50-3798

Confirming airworthiness prior to takeoff in icing conditions—pilot options.
Eloranta, J.T., Flight Safety Foundation International Air Safety Seminar, 45th, and International Federation of Airworthiness International Conference, 22nd, Long Beach, CA, Nov. 2-5, 1992. Proceedings, Arlington, Flight Safety Foundation, 1992, p.259-262.
DLC TL553.5.F565a
Aircraft icing, Ground ice, Ice detection, Ice control, Safety, Cold weather performance, Standards, Countermeasures

50-3799

Beware carb ice. *Flight safety bulletin,* 1992-1993, 28(4), p.22,24,26.
DLC TL553.5.F556
Aircraft icing, Carburetors, Safety, Accidents, Countermeasures

50-3800

Effects of a spillage of diesel fuel on a rocky shore in the sub-antarctic region (Macquarie Island).
Simpson, R.D., Smith, S.D.A., Pople, A.R., *Marine pollution bulletin,* Apr.-Dec. 1995, 31(4-12), p.367-371, 20 refs.
Fuels, Marine biology, Ships, —Macquarie Island
On Dec. 3, 1987, the supply ship *Nella Dan* ran aground at Macquarie I. releasing about 270,000 l of oil, mostly light marine diesel, into the sea. At the time of the incident, many marine invertebrates were washed up dead along 2 km of shoreline. Twelve months later, the shore community was investigated using: 1. algal and invertebrate populations of the littoral and sublittoral rocky shore, and 2. the invertebrate communities living in the holdfasts of the giant kelp *Durvillaea antarctica,* which were collected for later examination. Investigations were undertaken at both affected and control locations. Analyses of differences in community structure involved nested ANOVA and multidimensional scaling techniques. On the rocky substrate, the effect of the spill was restricted to some biota of the lower littoral and sublittoral zones—particularly echinoderms and the patellid limpet *Nacella macquariensis.* There were differences in cover for some algal species between locations. Within the kelp holdfasts, communities were dominated by peracarid crustaceans at control locations and by polychaetes (particularly the opportunistic groups—capitellids, cirratulids and spionids) at oil-affected locations. (Auth. mod.)

50-3801

Glaciers: a water resource.
Meier, M.F., Post, A., Washington, D.C., U.S. Government Printing Office, 1995, 23p. (cols.).
Glaciers, Distribution, Water supply, Stream flow, Ice melting, Outburst floods, United States

50-3802

Investigations of contributions by chemical and dynamical processes to the variability of stratospheric ozone above the Arctic. [Untersuchungen zum Beitrag chemischer und dynamischer Prozesse zur Variabilität des stratosphärischen Ozons über der Arktis]
Heese, B., *Berichte zur Polarforschung,* Jan. 1996, No.196, 91p., In German with English summary. Refs. p.86-91. In July 1995, this work was submitted as a dissertation to Division 2 (Biologie/Chemistry) of the University of Bremen.
Stratosphere, Ozone, Polar stratospheric clouds, Polar vortex

50-3803

Almost forgotten expedition. [Pochti zabytaia ekspeditsiia]
Maksimova, O., *Morskoĭ flot,* May-June 1995, No.5-6, p.34-36, In Russian.
History, Expeditions, Ice navigation, Icebreakers

50-3804

Naturalist's guide to the Arctic.
Pielou, E.C., Chicago, University of Chicago Press, 1994, 327p. (Pertinent p.15-190).
Manuals, Sea ice, Tundra vegetation, Permafrost, Peat, Hummocks

50-3805

Studies in applied glaciology, Antarctica, 1961-1962.
Mellor, M., Morelli, P., MP 3795, Hanover, NH, U.S. Army Cold Regions Research and Engineering Laboratory, July 1962, 22p. + figs.
Stations, Undersnow facilities, Snow tunnels, Snow loads, Snow strength, Snow (construction material), Antarctica—Byrd Station
During the antarctic summer of 1961-62 a CRREL group carried out a program of applied snow studies at New Byrd Station and at the South Pole. In the undersnow complex of New Byrd Station repeated surveys were made, and equipment for recording deformation and temperature was installed at a number of places. Foundation tests and confined compressive creep tests were conducted at both Byrd and South Pole, and some experiments on the reinforcement of cast snow (Peter snow) were made. The general aims of the project were to monitor deformation and temperature change in the undersnow camp for the benefit of the operators, to provide data for the rational design of future ice cap stations, and to extend the range of information on snow properties in the antarctic environment. Since significant deformations in the undersnow complex at New Byrd will take one or two years to develop, this report is confined to a description of the tasks accomplished together with a preliminary data presentation and brief discussion.

50-3806

Frozen soil-structure interfaces.
Ladanyi, B., Mechanics of geomaterial interfaces. Studies in applied mechanics, No.42. Edited by A.P.S. Selvadurai and M.J. Boulon, Amsterdam, Elsevier Science B.V., 1995, p.3-33, 69 refs.
DLC TA705.M39 1995
Permafrost beneath structures, Frozen ground strength, Frozen ground compression, Soil freezing, Soil creep, Ice adhesion, Pile load tests, Mathematical models

50-3807

Experimental investigations of the behavior of ice at the contact zone.
Timco, G.W., Frederking, R.M.W., Mechanics of geomaterial interfaces. Studies in applied mechanics, No.42. Edited by A.P.S. Selvadurai and M.J. Boulon, Amsterdam, Elsevier Science B.V., 1995, p.35-55, 50 refs.
DLC TA705.M39 1995
Ice solid interface, Ice cover strength, Ice loads, Ice friction, Ice pressure, Ice deformation, Regelation, Water films

50-3808

Models of ice-structure contact for engineering applications.
Riska, K., Mechanics of geomaterial interfaces. Studies in applied mechanics, No.42. Edited by A.P.S. Selvadurai and M.J. Boulon, Amsterdam, Elsevier Science B.V., 1995, p.77-103, 59 refs.
DLC TA705.M39 1995
Ice solid interface, Ice cover strength, Ice loads, Ice pressure, Ice deformation, Ice breaking, Ice cracks, Offshore structures, Mathematical models

50-3809

Arctic Flux Study: a regional view of trace gas release.
Weller, G., et al, *Journal of biogeography,* Mar.-May 1995, 22(2-3), Global Change and Terrestrial Ecosystem Science Conference, 1st, Woods Hole, MA, May 23-27, 1994. Terrestrial ecosystem interactions with global change. Vol.1, p.365-374, 24 refs.
Climatology, Climatic changes, Tundra climate, Global warming, Ecosystems, Vegetation factors, Carbon dioxide, Natural gas, Evapotranspiration, Vapor transfer, Geochemical cycles, Soil air interface, Research projects

50-3810

Initial assessment of multi-scale measures of CO_2 and H_2O flux in the Siberian taiga.

Hollinger, D.Y., et al, *Journal of biogeography*, Mar.-May 1995, 22(2-3), Global Change and Terrestrial Ecosystem Science Conference, 1st, Woods Hole, MA, May 23-27, 1994. Terrestrial ecosystem interactions with global change. Vol.1, p.425-431, 22 refs.

Climatology, Taiga, Subarctic landscapes, Forest canopy, Carbon dioxide, Water vapor, Evapotranspiration, Climatic changes, Atmospheric composition, Soil air interface, Sampling, Microclimatology, Russia—Siberia

50-3811

Observations of thermospheric wind velocities and temperatures by the use of a Fabry-Perot Doppler imaging system at Syowa Station, Antarctica.

Nakajima, H., Okano, S., Fukunishi, H., Ono, T., *Applied optics*, Dec. 20, 1995, 34(36), p.8382-8395, 21 refs.

Polar atmospheres, Atmospheric physics, Air temperature, Wind velocity, Remote sensing, Spectroscopy, Temperature measurement, Imaging, Atmospheric electricity, Meteorological instruments, Design, Antarctica—Showa Station

A new optical instrument, the Fabry-Perot Doppler imaging system, has been developed for observation of two-dimensional distributions of thermospheric wind velocities and temperatures by the measurement of the Doppler shift and width of the aurora or of the airglow emission lines of atomic oxygen OI 557.7 nm and OI 630.0 nm over a wide field of view (165°). A technique for the derivation of Doppler temperatures and wind velocities was developed by use of a truncated Fourier series. Thermospheric wind velocities and temperatures have been obtained with unprecedented high temporal and spatial resolutions. Errors in the derived wind velocities and temperatures are estimated to be less than 25 m/s and 100 K for inner-fringe positions and 35 m/s and 170 K for outer-fringe positions. This system was applied to observations of thermospheric wind velocities and temperatures at Showa Station for the period of one austral winter in 1990. (Auth. mod.)

50-3812

1-D model of the formation and evolution of polar stratospheric clouds.

Panegrossi, G., Fuà, D., Fiocco, G., *Journal of atmospheric chemistry*, Jan. 1996, 23(1), p.5-35, 42 refs.

Polar atmospheres, Polar stratospheric clouds, Cloud physics, Heterogeneous nucleation, Aerosols, Turbulent diffusion, Ice vapor interface, Cloud dissipation, Ozone, Computerized simulation

A 1-D model of the formation and seasonal evolution of polar stratospheric clouds (PSCs) is described. The model considers PSCs of types 1 and 2 in the vertical range from 8 to 30 km and uses real temperature data. The micro-physical processes included in the model are heterogeneous nucleation and condensation (or evaporation), while sedimentation, gas diffusion and vertical wind velocity are the processes responsible for transport. Model simulations have been compared with PSC data obtained by lidar at the South Pole; results for the 1990 winter are discussed. The different contribution of type 1 and type 2 PSCs to the measured backscattering coefficient has been evidenced. In the simulations, layers of NAT particles form when low values of the backscattering coefficient are measured; similarly, ice particles form when sharper and rapidly changeable structures with higher values of the backscattering coefficient are observed. Significant results on the condensation and depletion of HNO_3 and H_2O are presented. (Auth. mod.)

50-3813

Cosmogenic nuclide exposure ages along a vertical transect in western Norway: implications for the height of the Fennoscandian ice sheet.

Brook, E.J., Nesje, A., Lehman, S.J., Raisbek, G.M., Yiou, F., *Geology*, Mar. 1996, 24(3), p.207-210, 37 refs.

Pleistocene, Ice sheets, Glacier oscillation, Glacial geology, Glacial erosion, Bedrock, Gamma irradiation, Radioactive isotopes, Radioactive age determination, Norway—Skåla

50-3814

Chronology of late Wisconsin ice retreat from the western Ross Sea, Antarctica.

Licht, K.J., Jennings, A.E., Andrews, J.T., Williams, K.M., *Geology*, Mar. 1996, 24(3), p.223-226, 25 refs.

Pleistocene, Ice sheets, Ice shelves, Glacial geology, Grounded ice, Glacier oscillation, Marine deposits, Sampling, Drill core analysis, Radioactive age determination, Geochronology, Lithology, Antarctica—Ross Sea

Lithologic data from marine sedimentary cores and accelerator mass spectrometer (AMS) radiocarbon dates indicate that grounded ice did not advance to the western Ross Sea continental shelf edge during the last glacial maximum (LGM). A chronology of the timing of ice retreat was provided by 26 AMS dates, obtained from 12 cores. Dates ranging from 20 to 29 ka suggest that the outer continental shelf was not covered by grounded glacial ice prior to and during the early stages of the LGM. ^{14}C dates just above transitions from subglacial diamictons to marine muds indicate that the area around the Drygalski ice tongue was deglaciated by at least 11.5 ka. The Ross Ice Shelf reached its present-day position near Ross I. by about 7 ka. A hiatus of about 15 ka is apparent in radiocarbon dates in cores from the outer continental shelf. The hiatus is interpreted to represent an absence of sedimentation caused by the presence of an ice shelf. (Auth. mod.)

50-3815

Kinetics of ice nucleation initiated by molecular crystals.

IAtsimirskiĭ, V.K., Budarin, V.L., Oleksenko, L.P., *Theoretical and experimental chemistry*, May 1995, 30(6), p.282-285, Translated from Teoreticheskaia i eksperimental'naia khimiia. 5 refs.

Ice physics, Cloud physics, Supercooled clouds, Ice nuclei, Ice crystal growth, Heterogeneous nucleation, Organic nuclei, Ice water interface, Thermodynamic properties, Simulation, Adsorption

50-3816

Regional variations of moist static energy flux into the Arctic.

Overland, J.E., Turet, P., Oort, A.H., *Journal of climate*, Jan. 1996, 9(1), p.54-65, 20 refs.

Polar atmospheres, Climatology, Atmospheric circulation, Heat flux, Heat balance, Wind velocity, Wind direction, Thermal radiation, Statistical analysis

50-3817

Dipole moment of the water molecule in the condensed phase: a periodic Hartree-Fock estimate.

Gatti, C., Silvi, B., Colonna, F., *Chemical physics letters*, Dec. 15, 1993, 247(1-2), p.135-141, 30 refs.

Water structure, Solid phases, Molecular structure, Ice physics, Polarization (charge separation), Ice dielectrics, Charge transfer, Proton transport, Thermodynamic properties, Molecular energy levels, Simulation

50-3818

Analytical modelling of heat transfer from a single slab in freezing.

Dincer, I., *International journal of energy research*, Apr. 1995, 19(3), p.227-233, 17 refs.

Solids, Plant tissues, Preserving, Freezing, Heat transfer coefficient, Mathematical models, Temperature distribution, Temperature measurement, Thermal analysis

50-3819

Simple energy budget algorithm for the snowmelt runoff model.

Kustas, W.P., Rango, A., Uijlenhoet, R., *Water resources research*, May 1994, 30(5), p.1515-1527, 73 refs.

Snow hydrology, Watersheds, Snowmelt, Hydrography, Runoff forecasting, Surface energy, Heat balance, Radiation balance, Degree days, Mathematical models

50-3820

Simulation of streamflow in a macroscale watershed using general circulation model data.

Kite, G.W., Dalton, A., Dion, K., *Water resources research*, May 1994, 30(5), p.1547-1559, 25 refs.

Hydrology, Climatology, Watersheds, Subarctic landscapes, Stream flow, Hydrography, Hydrologic cycle, Snow water equivalent, Water transport, Mathematical models

50-3821

Polar lows in the Labrador Sea—a case study.

Moore, G.W.K., Reader, M.C., York, J., Sathiyamoorthy, S., *Tellus*, Jan. 1996, 48A(1), p.17-40, 37 refs.

Oceanography, Marine meteorology, Fronts (meteorology), Atmospheric disturbances, Turbulent boundary layer, Convection, Air water interactions, Spaceborne photography, Cloud cover, Labrador Sea

50-3822

Investigation of the general circulation of the Arctic Ocean using an isopycnal model.

Holland, D.M., Mysak, L.A., Oberhuber, J.M., *Tellus*, Jan. 1996, 48A(1), p.138-157, 37 refs.

Oceanography, Climatology, Ocean currents, Stratification, Sea ice, Drift, Ice cover thickness, Air ice water interaction, Ice cover effect, Bottom topography, Mathematical models, Simulation, Arctic Ocean

50-3823

Review of sea ice density.

Timco, G.W., Frederking, R.M.W., *Cold regions science and technology*, Jan. 1996, 24(1), p.1-6, 27 refs.

Oceanography, Sea ice, Physical properties, Sampling, Ice density, Salinity, Measurement, Accuracy

50-3824

Dynamic impact between a viscoelastic ice floe and a rigid structure.

Morland, L.W., *Cold regions science and technology*, Jan. 1996, 24(1), p.7-28, 26 refs.

Sea ice, Ice floes, Ice mechanics, Ice solid interface, Ice pressure, Impact strength, Stress concentration, Wave propagation, Rheology, Dynamic loads, Viscoelasticity, Mathematical models

50-3825

On the generation of internal waves beneath sea ice by a moving load.

Duffy, D.G., *Cold regions science and technology*, Jan. 1996, 24(1), p.29-39, 17 refs.

Oceanography, Sea ice, Ice mechanics, Ice water interface, Ice solid interface, Dynamic loads, Resonance, Vibration, Gravity waves, Wave propagation, Mathematical models

50-3826

Wing crack models of the brittle compressive failure of ice.

Nixon, W.A., *Cold regions science and technology*, Jan. 1996, 24(1), p.41-55, 29 refs.

Ice mechanics, Ice strength, Ice microstructure, Cracking (fracturing), Crack propagation, Brittleness, Grain size, Compressive properties, Mathematical models

50-3827

Winter-time convection in open-graded embankments.

Goering, D.J., Kumar, P., *Cold regions science and technology*, Jan. 1996, 24(1), p.57-74, 17 refs.

Engineering geology, Permafrost preservation, Permafrost physics, Permafrost bases, Permafrost heat transfer, Embankments, Roadbeds, Thaw weakening, Isotherms, Permeability, Soil temperature, Soil air interface, Convection, Mathematical models

50-3828

Effects of individual ridging events on the ice thickness distribution in the arctic ice pack.

Hopkins, M.A., MP 3796, *Cold regions science and technology*, Jan. 1996, 24(1), p.75-82, 4 refs.

Sea ice, Ice mechanics, Ice deformation, Pressure ridges, Flexural strength, Ice cover thickness, Distribution, Variations, Classifications, Mathematical models, Simulation

The functional relationship between the redistribution of ice thicknesses and deformation is an important component in basin scale models of the arctic ice pack. A description of the way in which ice thickens in a single pressure ridge is basic to an understanding of the redistribution over a large area of the pack containing many ridges. In this work the pressure ridging process is modeled using a two-dimensional particle simulation technique. Blocks are broken from an intact sheet of relatively thin lead ice driven against a thick, multi-year floe at a constant speed. The blocks of ice rubble accumulate to form the ridge sail and keel. A series of numerical experiments are performed with the model to determine the change in the ice thickness distribution in an area encompassing the ridge as a function of the volume of ridged lead ice.

50-3829

Study of the morphology of a discontinuous section of a first year arctic pressure ridge.

Bowen, R.G., Topham, D.R., *Cold regions science and technology*, Jan. 1996, 24(1), p.83-100, 21 refs.

Sea ice, Oceanography, Ice surveys, Pressure ridges, Surface structure, Ice cover thickness, Ice bottom surface, Surface roughness, Radio echo soundings, Stereophotography, Profiles, Fractals, Isostasy

50-3830

Effect of climate warming on the Qinghai-Tibet Highway, China.

Tong, C.J., Wu, Q.B., *Cold regions science and technology,* Jan. 1996, 24(1), p.101-106, 21 refs.

Climatology, Climatic changes, Global warming, Permafrost bases, Roadbeds, Active layer, Soil temperature, Thaw depth, Thaw weakening, Ground ice, Permafrost transformation, Degradation, Design criteria, China—Qinghai-Tibet Highway

50-3831

Geoelectromagnetic monitoring of water discharge in the Bering Strait (appraising of potentialities).

Shneer, V.S., Trofimov, I.L., Korotaev, S.M., *Izvestiya. Physics of the solid earth,* Jan. 1995, 30(6), p.584-586, Translated from Fizika zemli. 17 refs.

Oceanography, Ocean currents, Water transport, Electric fields, Electromagnetic properties, Electrical resistivity, Mathematical models, Electrical measurement, Bering Strait

50-3832

Structure, composition and properties of the ice cover of seas and fresh-water bodies. [Stroenie, sostav i svoĭstva l̄edianogo pokrova morskikh i presnykh vodoemov]

Savel'ev, B.A., Moscow, Moskovskiĭ universitet, 1963, 540p., In Russian. Refs. passim.

Ice cover, Ice structure, Ice composition, Stefan problem, Porosity, Ice salinity, Ice temperature, Air ice water interaction, Ice thermal properties, Ice islands, Ice density, Ice mechanics, Ice formation, Ice growth, Seepage, Sea ice, River ice, Ice crystal structure

50-3833

Formation and movement of avalanches. [Vozniknovenie i dvizhenie lavin]

Moskalev, IU.D., Leningrad, Gidrometeorologicheskoe izdatel'stvo, 1966, 152p. + 1 fold. graph, In Russian. 145 refs.

DLC GB2405.M7

Avalanche formation, Avalanche mechanics, Snow cover stability, Snow strength, Viscosity, Nomographs, Snow plasticity, Analysis (mathematics)

50-3834

Synthetic scene generation process for smart weapons.

Welsh, J.P., Link, L.E., Jr., MP 3797, *Army RD&A,* July-Aug. 1995, p.33-36.

Terrain identification, Infrared photography, Infrared reconnaissance, Environment simulation, Computerized simulation, Image processing, Military equipment, Military operation, Military research

50-3835

On the structure of pressured sea ice.

Kovacs, A., MP 3798, Hanover, NH, U.S. Army Cold Regions Research and Engineering Laboratory, Sep. 1970, 57p., 15 refs.

Ice floes, Ice pressure, Ice deformation, Pressure ridges, Ice structure, Ice cover thickness

50-3836

Underwater explosions beneath ice: underwater shock wave pressure data from the Moonshine Lake test series.

Tanglis, E., Goertner, J.A., *U.S. Naval Surface Warfare Center. Technical report,* Jan. 1989, NSWC TR 88-440, 13p. + appends., 4 refs.

Ice cover effect, Ice water interface, Subglacial observations, Subsurface investigations, Ice acoustics, Underwater acoustics, Explosion effects, Shock waves, Detonation waves

50-3837

Guide to polar diving.

Jenkins, W.T., Arlington, VA, U.S. Office of Naval Research, June 1976, 83p., 46 refs.

Subglacial observations, Ice cover effect, Subsurface investigations, Cold weather operation, Cold weather survival, Clothing, Rescue equipment

50-3838

Determination of the coefficient of kinetic friction between ski and snow from the gliding velocity of a skier.

Leino, M.A.H., Spring, E., *Helsinki. University. Report series in geophysics,* 1984, No.19, 8p. + figs., 4 refs.

Skis, Plastics snow friction, Wood snow friction, Sliding

50-3839

Comparison of performance characteristics in snow of the polecat and weasel.

Rula, A.A., *U.S. Army Engineer Waterways Experiment Station, Vicksburg, MS. Miscellaneous paper,* Aug. 1958, No.4-282, 14p.

Snow vehicles, Tracked vehicles, Cold weather performance

50-3840

Steady-state convection in porous media—numerical studies on various problems in hydrothermics and snow metamorphism. [Stationäre Konvektion in porösen Medien—numerische Untersuchungen an unterschiedlichen Fragestellungen aus der Hydrothermik und der Schneemetamorphose]

Klever, N., *Berliner geowissenschaftliche Abhandlungen. Reihe B,* 1984, No.11, 114p., In German with English summary. Refs. p.107-114.

Metamorphism (snow), Snow thermal properties, Snow heat flux, Snow air interface, Snow permeability, Convection, Mathematical models

50-3841

Australian ice airstrip is a failure.

Handmer, D., Handmer, J., *Antarctic Society of Australia. Newsletter,* June 1990, No.21, p.16.

Ice runways, Aircraft landing areas, Safety, Cost analysis, Antarctica—Casey Station

50-3842

Problem of the climatic snow line. [Beitrag zum Problem der klimatischen Schneegrenze]

Lang, H., Davidson, G., *Schweizerische Naturforschende Gesellschaft. Verhandlungen,* 1973, p.158-160, In German. 8 refs.

Snow line, Snow cover distribution, Snow depth, Climatic factors, Seasonal variations

50-3843

Strategies for revegetation of disturbed gravel areas in climate stressed subarctic environments with special reference to Churchill, Manitoba, Canada: a literature review.

Firlotte, N., Staniforth, R.J., *Climate research,* Feb. 1995, Vol.5, p.49-52, 47 refs.

Tundra vegetation, Plant ecology, Revegetation, Land reclamation, Canada—Manitoba—Churchill

50-3844

Geochemical characteristics of organic compounds in a permafrost sediment core sample from northeast Siberia, Russia.

Matsumoto, G.I., Friedmann, E.I., Gilichinskiĭ, D.A., NIPR Symposium on Antarctic Geosciences, Proceedings. No.8, Tokyo, National Institute of Polar Research, Oct. 1995, p.258-267, 42 refs.

Tundra soils, Organic soils, Soil composition, Soil microbiology, Frozen ground chemistry, Permafrost dating, Permafrost origin, Lacustrine deposits, Paleoecology, Paleobotany, Drill core analysis, Russia—Yakutia

50-3845

Glaciers of the Swiss Alps 1975/76 and 1976/77. [Die Gletscher der Schweizer Alpen 1975/76 und 1976/77]

Kasser, P., Aellen, M., Siegenthaler, H., *Schweizerische Naturforschende Gesellschaft. Gletscherkommission. Glaziologisches Jahrbuch. Bericht,* 1983, No.97/98, 208p., In German and French with English summary. Refs. passim.

Mountain glaciers, Glacier surveys, Glacier oscillation, Glacier mass balance, Switzerland

50-3846

Glaciers of the Swiss Alps 1977/78 and 1978/79. [Die Gletscher der Schweizer Alpen 1977/78 und 1978/79]

Kasser, P., Aellen, M., Siegenthaler, H., *Schweizerische Naturforschende Gesellschaft. Gletscherkommission. Glaziologisches Jahrbuch. Bericht,* 1986, No.99/100, 288p., In German and French with English summary. Refs. passim.

Mountain glaciers, Glacier surveys, Glacier oscillation, Glacier mass balance, Switzerland

50-3847

Ring analysis of Nordic pavement testing machines and proposal for a test method for determination of the wear resistance of concrete pavements. [Ringanalys av Nordiska provvägsmaskiner och förslag till gemensam provningsmetod för slitstyrka hos betongbeläggningar]

Hultqvist, B.Å., Carlsson, B., *Statens väg-och transportforskningsinstitut (Swedish National Road and Transport Research Institute). VTI meddelande,* 1996, No.774, 36p. + appends., In Swedish with English summary. 2 refs.

Concrete pavements, Concrete durability, Road maintenance, Tires, Environmental tests, Hardness tests

50-3848

Impacts of increased winter snow cover on upland tundra vegetation: a case example.

Scott, P.A., Rouse, W.R., *Climate research,* Feb. 1995, Vol.5, p.25-30, 24 refs.

Snow cover effect, Tundra vegetation, Tundra climate, Plant ecology, Vegetation patterns, Global warming, Canada—Manitoba—Churchill

50-3849

Datasets of the scintillation experiment at Sevilleta, New Mexico.

Otto, W.D., et al, MP 3799, *U.S. National Oceanic and Atmospheric Administration. Environmental Research Laboratories. Environmental Technology Laboratory. NOAA technical memorandum,* Feb. 1996, ERL ETL-261, 42p., 8 refs.

Soil air interface, Heat flux, Atmospheric boundary layer, Turbulence, Atmospheric attenuation, Scintillation

The datasets from three optical scintillometers and a millimeter-wave instrument are discussed. The quantities of the refractive-index structure parameter C^2_n, and the inner scale l_0, which were obtained from atmospheric scintillation along with their derived fluxes, constitute these datasets. The datasets' structure and the overall data processing are described.

50-3850

Fluxes of momentum and heat measured at Sevilleta, New Mexico.

Hill, R.J., et al, MP 3800, *U.S. National Oceanic and Atmospheric Administration. Environmental Research Laboratories. Environmental Technology Laboratory. NOAA technical memorandum,* Feb. 1996, ERL ETL-260, 46p., 10 refs.

Soil air interface, Heat flux, Atmospheric boundary layer, Turbulent exchange, Atmospheric density, Atmospheric attenuation, Scintillation

The flux of sensible heat between the surface and the atmosphere was determined from a variety of different instruments and methods. These instruments were a Bowen ratio station, a three-axis sonic anemometer-thermometer, a single-axis sonic anemometer with a thermocouple, and scintillometers. The methods employed were, respectively, energy balance, eddy correlation, and indirect dissipation. Comparison of the resulting sensible heat fluxes shows that they are in good agreement. Momentum flux is expressed in terms of the friction velocity and was obtained from several of the instruments by different methods. Friction velocity was obtained using eddy correlation of the three-axis sonic anemometer-thermometer data. The surface roughness was obtained from this data by application of Monin-Obukhov similarity theory. Using this roughness length, friction velocity was obtained from wind speed and heat flux measured at the Bowen station by application of Monin-Obukhov similarity. Friction velocity was also obtained from the scintillometer data using the indirect dissipation method, which is an application of Monin-Obukhov similarity. The scintillometer's friction velocity disagrees with the friction velocities from the sonic anemometer-thermometer and the Bowen station. This disagreement is shown to depend on atmospheric surface-layer stability. Also, scatter in the derived roughness length depends on the same stability ranges. Since there is no known reason for instrument malfunction to depend on stability, the data suggest that the accepted Monin-Obukhov similarity relationships are inaccurate for the experiment site; this might be caused by the inhomogeneity of the surface. How-

ever, the required deviation from standard Monin-Obukhov formulas seems to be too large to be plausible. Therefore, an unprecedented malfunction of the scintillometer is suspected.

50-3851

Origin of the arctic driftwood—a dendrochronological study.

Eggertsson, Ó., *Lundqua thesis*, 1994, Vol.32, 13p. + appends., Numerous refs. passim.

Drift, Ocean currents, Plant ecology, Paleobotany, Wood

50-3852

Nonlinear creep of artificially frozen Emscher marl. [Nichtlineares Kriechen von künstlich gefrorenem Emschermergel]

Klein, J., *Ruhr-Universität Bochum. Institut für Grundbau, Wasserwesen und Verkehrswesen. Schriftenreihe. Serie G*, Dec. 1978, No.2, 123p., In German with English and French summaries. 63 refs.

Soil freezing, Artificial freezing, Soil stabilization, Frozen ground strength, Soil creep, Shaft sinking, Clay soils, Mathematical models, Computerized simulation

50-3853

Compacted snow road. 1. Properties of snow.

Eriksson, R., Canada. National Research Council. Technical translation No.811, Ottawa, 44p., Translated from Svenska Skogsvårdsföreningens Tidskrift. 31 refs.

Snow roads, Snow (construction material), Snow compaction, Snow physics, Physical properties, Bearing strength, Ice solid interface, Loading, Cold weather construction, Mechanical tests

50-3854

Sea ice data report.

Kovacs, A., Kalafut, J., MP 3801, U.S. Army Cold Regions Research and Engineering Laboratory, Hanover, June 1970, 9p. + appends., 6 refs.

Sea ice, Ice cover strength, Ice mechanics, Ice cores, Penetration tests, Impact tests, Penetrometers, Ice solid interface, Porosity, Statistical analysis, Tensile properties, Mechanical properties

From Feb. 18 to Mar. 18, 1970 the U.S. Coast Guard icebreaker *Northwind* (WAGB 282) was assigned for operations in the Bering and Chukchi Seas to support research programs by USACRREL (pressure ridge morphology investigations) and Sandia Laboratory (sea ice penetrometer study) and to undertake a transportation feasibility analysis, i.e. a northing penetration into the Chukchi Sea. The Sandia study consisted of determining the feasibility of measuring the thickness and strength of sea ice using instrumented, telemetric, airdropped penetrometers. In support of this study, CRREL obtained data characteristic of the ice penetrated by the instrumented projectile. These data include the measured temperature, salinity and strength of the ice with depth and the brine volume computed from temperature and salinity determinations. In addition, ice density vs. depth was obtained at several sites.

50-3855

Better visibility needed in snowplowing. *Better roads*, June 1995, 65(6), p.23,25,28.

Snow removal equipment, Research projects, Road maintenance, Cold weather operation, Safety, Visibility, Design, Countermeasures

50-3856

Winter maintenance: back to the basics. *Better roads*, June 1995, 65(6), p.24.

Road maintenance, Winter maintenance, Snow removal, Ice control, Logistics

50-3857

What you need to know about prewetting deicers.

Mergenmeier, A., *Better roads*, June 1995, 65(6), p.29-31.

Road maintenance, Winter maintenance, Ice control, Salting, Cold weather performance, Physical properties, Solubility, Brines, Water content, Moisture transfer

50-3858

How to battle snow and ice.

Askew, D., *Better roads*, June 1995, 65(6), p.33-35.

Road maintenance, Winter maintenance, Snow removal, Ice control, Cold weather operation, Logistics, Safety

50-3859

Handling snow on the New Jersey Turnpike.

Pagan, A.R., *Better roads*, June 1995, 65(6), p.45.

Road maintenance, Winter maintenance, Snow removal, Salting, Standards, Cold weather operation

50-3860

Growth responses of *Polytrichum commune* and *Hylocomium splendens* to simulated environmental change in the sub-arctic.

Potter, J.A., Press, M.C., Callaghan, T.V., Lee, J.A., *New phytologist*, Dec. 1995, 131(4), p.533-541, 48 refs.

Plant ecology, Ecosystems, Mosses, Growth, Subarctic landscapes, Climatic changes, Global warming, Environmental impact, Vegetation patterns, Vegetation factors, Nutrient cycle, Simulation

50-3861

Undergraduate laboratory exercise introducing form-development modeling in glacial geomorphology.

Harbor, J.M., Keattch, S.E., *Journal of geological education*, Nov. 1995, 43(5), p.529-533, 7 refs.

Education, Experimentation, Laboratory techniques, Glacial geology, Glacial erosion, Geomorphology, Landforms, Mathematical models

50-3862

Sedimentary structures of cold-climate coastal dunes, eastern Hudson Bay, Canada.

Ruz, M.H., Allard, M., *Sedimentology*, Oct. 1995, 42(5), p.725-734, 38 refs.

Subarctic landscapes, Beaches, Sedimentation, Eolian soils, Sands, Soil structure, Stratification, Thaw weakening, Grain size, Geomorphology, Snowmelt, Canada—Quebec—Hudson Bay

50-3863

Fabric signature of subglacial till deformation, Breidamerkurjökull, Iceland.

Benn, D.I., *Sedimentology*, Oct. 1995, 42(5), p.735-747, 59 refs.

Glacial geology, Pleistocene, Glacial deposits, Glacier beds, Sediment transport, Deformation, Microstructure, Strains, Soil texture, Geomorphology, Iceland—Breidamerkurjökull

50-3864

Volcanic and tectonic history of Enceladus.

Kargel, J.S., Pozio, S., *Icarus*, Feb. 1996, 19(2), p.385-404, 67 refs.

Satellites (natural), Surface structure, Regolith, Extraterrestrial ice, Ground ice, Pit and mound topography, Geochronology, Geomorphology, Spaceborne photography, Extraterrestrial ice, Volcanoes, Tectonics

50-3865

Feasibility of determining the composition of planetary ices by far infrared observations: application to Martian cloud and surface ices.

Johnson, B.R., Atreya, S.K., *Icarus*, Feb. 1996, 19(2), p.405-426, 59 refs.

Mars (planet), Cloud physics, Extraterrestrial ice, Remote sensing, Infrared spectroscopy, Ice spectroscopy, Spectra, Ice detection, Ice composition, Ice optics, Radiation absorption, Refractivity, Simulation, Indexes (ratios)

50-3866

Concrete TLP to sit out Barents bergs.

Cottrill, A., *Offshore engineer*, Aug. 1990, p.32.

DLC TC1501.O44

Offshore structures, Oil wells, Concrete structures, Floating structures, Icebergs, Ice loads, Impact strength, Moorings, Protection, Design

50-3867

Planktonic foraminifer *Neogloboquadrina pachyderma* (Ehrenberg) in the Weddell Sea, Antarctica. [Die planktische Foraminifere *Neogloboquadrina pachyderma* (Ehrenberg) im Weddellmeer, Antarktis]

Berberich, D., *Berichte zur Polarforschung*, 1996, No.195, 193p., In German with English summary. Refs. p.165-177.

Marine biology, Nutrient cycle, Sea ice, Ocean currents, Biomass, Algae, Seasonal variations, Antarctica—Weddell Sea

The distribution, seasonal development and population dynamics of *Neogloboquadrina pachyderma* (Ehrenberg) were analyzed in relation to hydrographic and sea ice regimes in the Weddell Sea, where samples were taken during six expeditions with RV *Polarstern*. Ontogenetic studies facilitate a more natural classification, taxonomy and phylogeny as well as the illumination of evolutionary lineages. Like other planktonic foraminifers, *N. pachyderma* passes through five stages during its ontogenetic development: prolocular, juvenile, neanic, adult and terminal stage. The transition from one ontogenetic stage to the next is characterized by biometric measurements and morphological changes, which were documented through scanning electron microscopy. Significant differences during these transitions are changes in the crystalline ultrastructure of the test, arrangement of chambers, formation of pores, morphology of the aperture and initiation of reproductive signs. Biometrical analyses revealed a phased pattern in successive chamber-by-chamber increases of maximum test size, resulting in allometric growth. Strong seasonal changes produce distinctive activity patterns. *N. pachyderma* overwinters in sea ice where the algae biomass is high and serves as a readily available food source. Spring and the short summer are then occupied in the reproductive processes. (Auth. mod.)

50-3868

Distribution and dynamics of inorganic nitrogen compounds in the troposphere of continental, coastal, marine and Arctic areas. [Verteilung und Dynamik anorganischer Stickstoffverbindungen in der Troposphäre mittlerer Breiten und der Arktis]

Hernández, M.D.A., *Berichte zur Polarforschung*, 1996, No.184, 194p., With German and Spanish summaries and appreciations. Refs. p.138-153.

Atmospheric composition, Chemical composition, Air pollution, Littoral zone, Measuring instruments, Greenland, Norway—Spitsbergen

50-3869

Seasonal changes of antarctic marine bacterioplankton and sea ice bacterial assemblages.

Delille, D., Rosiers, C., *Polar biology*, Jan. 1996, 16(1), p.27-34, Refs. p.32-34.

Sea ice distribution, Ice cover effect, Bacteria, Biomass, Seasonal variations, Marine biology, Brines, Sea water, Antarctica—Géologie Archipelago

The distributions of bacterial populations in sea ice and underlying seawater were investigated on the continental shelf of the Adélie Coast area. A reference station was sampled weekly from Jan. 1991 to Jan. 1992. In winter, the survey included a minimum of six sampling layers: surface and bottom ice, brine, seawater from the interface, and at 0.5 and 2 m depth. In seawater, the total bacterial abundance ranged from 0.5×10^5 cells/ml in July to 6.0×10^5 cells/ml after ice break. Values reaching 2.5×10^6 cells/ml were recorded in the overlying ice cover. Mean cell volumes were twice as high in brine as in seawater. The saprophytic bacterial abundance ranged from 5.0×10^4 CFU (colony-forming units)/ml in some winter interface samples to less than 1.0×10^3 CFU/ml in most of the summer seawater samples. In sea ice a clear decreasing gradient for most of the studied bacterial parameters from the surface layers towards the bottom layer was found. The ice cover had a discernible impact on underlying seawater, but its influence was restricted to a limited interface layer. (Auth.)

50-3870

McMurdo LTER: Glacier mass balances of Taylor Valley, Antarctica.

Fountain, A.G., Vaughn, B.H., Dana, G.L., *Antarctic journal of the United States*, 1994, 29(5), p.226-228, 6 refs.

Glacier surveys, Glacier mass balance, Calving, Meltwater, Antarctica—Commonwealth Glacier, Antarctica—Canada Glacier, Antarctica—Howard Glacier

In the 1993-1994 season, ablation stake networks were established on three glaciers: Commonwealth, Canada, and Howard. The ablation of the terminus cliff of Canada and Howard Glaciers, neglecting losses from calving events, is 5-10 times greater than on the top surface of these glaciers. Ablation from the glacier fan of Howard Glacier was almost twice that of either Commonwealth or Canada Glaciers. It is suggested that the cause of this difference is the sunlight-shading patterns in the valley. The mass balance of both Commonwealth and Howard Glaciers was negative during the Nov. to Jan. 1993-1994 summer season. To estimate the magnitude and fre-

quencey of calving events from the glacier terminus, automatic cameras were positioned in front of the Commonwealth and Howard Glaciers. Preliminary analysis of the photographs indicates that calving is infrequent. From late Oct. to the end of Jan., no calving events were detected at Commonwealth Glacier, and one event was detected at Howard Glacier.

50-3871

Differentiation of the composition and properties due to podzolization on the Baikal-Patom plateau. Kuz'min, V.A., *Eurasian soil science,* Feb. 1995, 27(2), p.12-21, Translation from Pochvovedenie, No.3, 1994. 22 refs.

Soil composition, Podsol, Soil chemistry, Permafrost, Taiga, Soil formation, Russia—Baykal Range, Russia—Patom Plateau

50-3872

Geographical patterns in the biological productivity of soil-and-vegetation associations of northern Eurasia.

Bazilevich, N.I., *Eurasian soil science,* Mar. 1995, 27(3), p.1-14, Translation from Pochvovedenie, No.10, 1993. 16 refs.

Biomass, Forest soils, Steppes, Tundra soils, Meadow soils, Mountain soils, Taiga, Decomposition, Russia—Siberia

50-3873

Russian soil geography as indicated by a new detailed map.

Andronikov, V.L., Rudneva, E.N., *Eurasian soil science,* Mar. 1995, 27(3), p.15-24, Translation from Pochvovedenie, No.10, 1993. 5 refs.

Maps, Soil mapping, Soil surveys, Tundra soils, Hummocks, Chernozem, Podsol, Taiga, Swamps, Russia

50-3874

Diagnostics of solonchaks.

Pankova, E.I., IAmnova, I.A., *Eurasian soil science,* Mar. 1995, 27(3), p.25-40, Translation from Pochvovedenie, No.10, 1993. 14 refs.

Soil classification, Soil composition, Ground water, Meadow soils, Soil profiles, Chernozem, Frozen ground, Saline soils, Solonchaks

50-3875

Features of the decomposition of soil surface lichens in the mountain tundra and northern and southern taiga.

Parinkina, O.M., Pereverzev, V.N., Piĭn, T.Kh., *Eurasian soil science,* Mar. 1995, 27(3), p.70-81, Translation from Pochvovedenie, No.5, 1994. 3 refs.

Decomposition, Lichens, Tundra soils, Mountain soils, Taiga, Biomass, Plant physiology, Soil microbiology, Russia—Kola Peninsula, Russia—Khibiny Mountains, Russia—Apatity, Estonia

50-3876

Aerial component of the soil-formation substrate in the southern part of the Maritime Territory.

Elpatevskiĭ, P.V., Arzhanova, V.S., Razzhigaeva, N.G., *Eurasian soil science,* Jan. 1995, 27(1), p.15-20, Translation from Pochvovedenie, No. 11, 1993. 14 refs.

Dust, Atmospheric composition, Snowfall, Particle size distribution, Aerosols, Rain, Russia—Primor'ye

50-3877

Evolution of soils in the basin of the middle reach of the Berelekh River (Upper Kolyma River).

Pavlov, B.A., Smertin, E.L., *Eurasian soil science,* Jan. 1995, 27(1), p.21-34, Translation from Pochvovedenie, No.11, 1993. 26 refs.

Soil formation, Soil profiles, Forest soils, Forest tundra, Tundra soils, Floodplains, Soil chemistry, Cryogenic soils, Soil structure, Russia—Kolyma River, Russia—Berelekh River

50-3878

Typization of elementary soil-cover structures occurring in European Russia.

Simakova, M.S., *Eurasian soil science,* Jan. 1995, 27(1), p.71-82, Translation from Pochvovedenie, No.2, 1994. 22 refs.

Soil structure, Tundra soils, Podsol, Forest soils, Taiga, Chernozem, Meadow soils, Russia

50-3879

Hydrologic role of soils and ecological methods of regulating water resources.

Voronkov, N.A., *Eurasian soil science,* Jan. 1995, 27(1), p.101-112, Translation from Pochvovedenie, No.9, 1993. 28 refs.

Hydrology, Ecology, Forest soils, Soil water, Snow cover effect, Evaporation, Transpiration, Water balance, Ground water, Russia—Moscow, Russia—Volgograd, Russia—Orenburg

50-3880

Using solar energy at the South Pole: photovoltaic electricity and solar heating.

Wills, R.H., MP 3802, Hanover, NH, U.S. Army Cold Regions Research and Engineering Laboratory, Dec. 1988, 42p., 16 refs.

Electric power, Solar radiation, Heating, Heat sources, Fuels, Cost analysis, Antarctica—Amundsen-Scott Station

NSF (National Science Foundation) spends about $1 million each year as of 1988 in fuel for electricity generation at the Amundsen-Scott Station. This could rise to $1.3 million in the near future with the installation of new generators and the building of a new summer camp. The high cost is mainly due to fuel transport cost from McMurdo to the Pole. The cost of diesel fuel at the Pole is about $8/gallon. The equivalent cost of electricity is 80¢/kw-h. At South Pole in summer, with 24 hours of sunshine each day, little cloud, clear air and a very reflective snow surface, an average of 1200 Watts/m^2 (110 W/ft^2) of solar energy is available for five months of the year. Summer is also the time of peak electric and heating demands. Direct electricity generation using photovoltaic cells is a practical way of reducing fuel consumption. A system costing $1.4 million could generate an average of 180 kW over five months of the summer at less than 16¢/kWh and reduce fuel costs by $330,000/y. A photovoltaic power system should operate for more than 20 years with no more than routine maintenance. It could also provide a prominent platform for U.S. renewable energy usage. Direct solar heating can be used at the Pole together with conventional oil-fired furnaces to reduce summer heating fuel use by 80% while still maintaining reliable heat and comfort levels. For example, the cost of heating a new summer camp building could be reduced from $21,000 to $4,000/16 week summer season using a solar heating system costing between $20,000 and $50,000, depending on the type of collectors used. (Auth. mod.)

50-3881

Calculation of the amount of salt required to melt ice and snow on highways.

Schneider, T.R., *National Research Council Canada. Technical translation,* 1962, NRC TT-1004, 42p., 8 refs. Translated from Eidgenössisches Institut für Schnee- und Lawinenforschung, Weissflujoch-Davos, Interner Bericht, No.328, 1960.

Road icing, Ice removal, Snow removal, Salting, Artificial melting, Road maintenance, Mathematical models

50-3882

U.S. Army research camps in northwest Greenland.

Tobiasson, W., MP 3803, Hanover, NH, U.S. Army Cold Regions Research and Engineering Laboratory, [1968], 5p.

Stations, Military facilities, Expeditions, Research projects, Cold weather operation, Cold weather construction, Greenland

50-3883

Experimental formula of falling velocity of snow crystals.

Kajikawa, M., *Meteorological Society of Japan. Journal,* Aug. 1975, 53(1), p.267-275, 7 refs.

Falling snow, Snowflakes, Snow crystal structure, Ice crystal size, Coalescence, Velocity measurement

50-3884

Fall velocity of snowflakes.

Jiusto, J.E., Bosworth, G.E., *Journal of applied meteorology,* Dec. 1971, Vol.10, p.1352-1354, 13 refs.

Falling snow, Snowflakes, Ice crystal size, Velocity measurement, Statistical analysis

50-3885

Research Vessel *Polar Duke*. Paramus, NJ, ITT Antarctic Services, Inc., Sep. 1987, 4p.

Oceanographic ships, Ice navigation

50-3886

Waveform model for surface and volume scattering from ice and snow.

Newkirk, M.H., Brown, G.S., *IEEE transactions on geoscience and remote sensing,* Mar. 1996, 34(2), p.444-456, 15 refs.

Remote sensing, Ice sheets, Snow cover, Airborne radar, Radar echoes, Scattering, Wave propagation, Attenuation, Height finding, Accuracy, Mathematical models

50-3887

Microwave permittivity of dry snow.

Mätzler, C., *IEEE transactions on geoscience and remote sensing,* Mar. 1996, 34(2), p.573-581, 30 refs.

Remote sensing, Snow physics, Snow density, Ice volume, Snow electrical properties, Dielectric properties, Sensors, Electrical measurement, Snow survey tools, Analysis (mathematics)

50-3888

Arctic and alpine biodiversity: patterns, causes and ecosystem consequences. Ecological studies. Vol.113, Berlin, Springer-Verlag, 1995, 332p., Refs. passim. For selected papers see 50-3889 through 50-3907.

DLC QH84.1.A7

Ecosystems, Arctic landscapes, Alpine landscapes, Plant ecology, Biomass, Growth, Vegetation patterns, Biogeography, Phenology, Nutrient cycle, Geochemical cycles, Climatic changes, Global change

50-3889

Patterns and causes of arctic plant community diversity.

Walker, M.D., Arctic and alpine biodiversity: patterns, causes and ecosystem consequences. Edited by F.S. Chapin, III et al and Ecological studies. Vol. 113, Berlin, Springer-Verlag, 1995, p.3-20, 69 refs.

DLC QH84.1.A7

Plant ecology, Ecosystems, Biogeography, Arctic landscapes, Tundra vegetation, Vegetation patterns, Classifications, Statistical analysis, Climatic factors, Temperature effects, Periglacial processes

50-3890

Causes of arctic plant diversity: origin and evolution.

Murray, D.F., Arctic and alpine biodiversity: patterns, causes and ecosystem consequences. Edited by F.S. Chapin, III et al and Ecological studies. Vol. 113, Berlin, Springer-Verlag, 1995, p.21-32, Refs. p.29-32.

DLC QH84.1.A7

Plant ecology, Ecosystems, Vegetation patterns, Arctic landscapes, Biogeography, Tundra vegetation, Tundra climate, Cold weather survival

50-3891

Patterns and causes of genetic diversity in arctic plants.

McGraw, J.B., Arctic and alpine biodiversity: patterns, causes and ecosystem consequences. Edited by F.S. Chapin, III et al and Ecological studies. Vol. 113, Berlin, Springer-Verlag, 1995, p.33-43, 42 refs.

DLC QH84.1.A7

Plant ecology, Tundra vegetation, Ecosystems, Vegetation patterns, Classifications, Growth, Tundra climate, Climatic changes, Statistical analysis

50-3892

Alpine plant diversity: a global survey and functional interpretations.

Körner, C., Arctic and alpine biodiversity: patterns, causes and ecosystem consequences. Edited by F.S. Chapin, III et al and Ecological studies. Vol. 113, Berlin, Springer-Verlag, 1995, p.45-62, 64 refs.

DLC QH84.1.A7

Plant ecology, Alpine landscapes, Ecosystems, Classifications, Vegetation patterns, Distribution, Biogeography, Climatic factors

50-3893

Origin and evolution of the mountain flora in Middle Asia and neighbouring mountain regions.

Agakhaniants, O.E., Breckle, S.W., Arctic and alpine biodiversity: patterns, causes and ecosystem consequences. Edited by F.S. Chapin, III et al and Ecological studies. Vol. 113, Berlin, Springer-Verlag, 1995, p.62-80, 37 refs.

DLC QH84.1.A7

Plant ecology, Mountains, Alpine landscapes, Vegetation patterns, Biogeography, Climatic factors, Pleistocene, Tectonics

50-3894

Arctic tundra biodiversity: a temporal perspective from Late Quaternary pollen records.

Brubaker, L.B., Anderson, P.M., Hu, F.S., Arctic and alpine biodiversity: patterns, causes and ecosystem consequences. Edited by F.S. Chapin, III et al and Ecological studies. Vol. 113, Berlin, Springer-Verlag, 1995, p.111-125, 62 refs.

DLC QH84.1.A7

Tundra vegetation, Paleoclimatology, Paleoecology, Arctic landscapes, Ecosystems, Biogeography, Vegetation patterns, Climatic factors, Quaternary deposits, Palynology

50-3895

Effects of mammals on ecosystem change at the Pleistocene-Holocene boundary.

Zimov, S.A., Chuprynin, V.I., Oreshko, A.P., Chapin, F.S., III, Chapin, M.C., Reynolds, J.F., Arctic and alpine biodiversity: patterns, causes and ecosystem consequences. Edited by F.S. Chapin, III et al and Ecological studies. Vol. 113, Berlin, Springer-Verlag, 1995, p.127-135, 59 refs.

DLC QH84.1.A7

Pleistocene, Ecosystems, Paleoecology, Arctic landscapes, Tundra terrain, Tundra vegetation, Animals, Soil erosion, Damage, Vegetation patterns, Theories

50-3896

Paleorecords of plant biodiversity in the Alps.

Ammann, B., Arctic and alpine biodiversity: patterns, causes and ecosystem consequences. Edited by F.S. Chapin, III et al and Ecological studies. Vol. 113, Berlin, Springer-Verlag, 1995, p.137-149, 69 refs.

DLC QH84.1.A7

Paleoecology, Plant ecology, Alpine landscapes, Geobotanical interpretation, Vegetation patterns, Palynology, Correlation, Climatic factors

50-3897

Implications for changes in arctic plant biodiversity from environmental manipulation experiments.

Callaghan, T.V., Jonasson, S., Arctic and alpine biodiversity: patterns, causes and ecosystem consequences. Edited by F.S. Chapin, III et al and Ecological studies. Vol. 113, Berlin, Springer-Verlag, 1995, p.151-166, 57 refs.

DLC QH84.1.A7

Plant ecology, Arctic landscapes, Ecosystems, Climatic changes, Vegetation patterns, Biomass, Biogeography, Soil chemistry, Simulation

50-3898

Patterns and current changes in alpine plant diversity.

Grabherr, G., Gottfried, M., Gruber, A., Pauli, H., Arctic and alpine biodiversity: patterns, causes and ecosystem consequences. Edited by F.S. Chapin, III et al and Ecological studies. Vol. 113, Berlin, Springer-Verlag, 1995, p.167-181, 42 refs.

DLC QH84.1.A7

Plant ecology, Greenhouse effect, Global warming, Alpine landscapes, Ecosystems, Vegetation patterns, Biogeography, Altitude

50-3899

Anthropogenic impacts on biodiversity in the Arctic.

Young, O.R., Chapin, F.S., III, Arctic and alpine biodiversity: patterns, causes and ecosystem consequences. Edited by F.S. Chapin, III et al and Ecological studies. Vol. 113, Berlin, Springer-Verlag, 1995, p.183-196, 32 refs.

DLC QH84.1.A7

Ecosystems, Arctic landscapes, Tundra vegetation, Damage, Human factors, Environmental impact, Environmental protection, Air pollution

50-3900

Plant functional diversity and resource control of primary production in Alaskan arctic tundras.

Shaver, G.R., Arctic and alpine biodiversity: patterns, causes and ecosystem consequences. Edited by F.S. Chapin, III et al and Ecological studies. Vol. 113, Berlin, Springer-Verlag, 1995, p.199-211, 54 refs.

DLC QH84.1.A7

Plant ecology, Ecosystems, Arctic landscapes, Tundra vegetation, Vegetation patterns, Biomass, Nutrient cycle, Soil composition

50-3901

Direct and indirect effects of plant species on biogeochemical processes in arctic ecosystems.

Hobbie, S.E., Arctic and alpine biodiversity: patterns, causes and ecosystem consequences. Edited by F.S. Chapin, III et al and Ecological studies. Vol. 113, Berlin, Springer-Verlag, 1995, p.213-224, 50 refs.

DLC QH84.1.A7

Plant ecology, Geochemical cycles, Ecosystems, Vegetation factors, Climatic factors, Arctic landscapes, Nutrient cycle, Biomass, Soil microbiology

50-3902

Causes and consequences of plant functional diversity in arctic ecosystems.

Chapin, F.S., III, Hobbie, S.E., Bret-Harte, M.S., Bonan, G.B., Arctic and alpine biodiversity: patterns, causes and ecosystem consequences. Edited by F.S. Chapin, III et al and Ecological studies. Vol. 113, Berlin, Springer-Verlag, 1995, p.225-237, 59 refs.

DLC QH84.1.A7

Plant ecology, Ecosystems, Tundra vegetation, Arctic landscapes, Vegetation patterns, Growth, Geochemical cycles, Nutrient cycle, Classifications, Global change, Environmental impact

50-3903

Ecosystem consequences of microbial diversity and community structure.

Schimel, J.P., Arctic and alpine biodiversity: patterns, causes and ecosystem consequences. Edited by F.S. Chapin, III et al and Ecological studies. Vol. 113, Berlin, Springer-Verlag, 1995, p.239-254, 73 refs.

DLC QH84.1.A7

Ecosystems, Plant ecology, Tundra vegetation, Tundra soils, Soil microbiology, Vegetation patterns

50-3904

Diversity of biomass and nitrogen distribution among plant species in arctic and alpine tundra ecosystems.

Pastor, J., Arctic and alpine biodiversity: patterns, causes and ecosystem consequences. Edited by F.S. Chapin, III et al and Ecological studies. Vol. 113, Berlin, Springer-Verlag, 1995, p.255-269, 32 refs.

DLC QH84.1.A7

Plant ecology, Ecosystems, Tundra vegetation, Alpine landscapes, Biomass, Vegetation patterns, Nutrient cycle, Mathematical models

50-3905

Plant-vertebrate herbivore interface in arctic ecosystems.

Jefferies, R.L., Bryant, J.P., Arctic and alpine biodiversity: patterns, causes and ecosystem consequences. Edited by F.S. Chapin, III et al and Ecological studies. Vol. 113, Berlin, Springer-Verlag, 1995, p.271-281, 59 refs.

DLC QH84.1.A7

Ecosystems, Ecology, Climatic changes, Tundra vegetation, Vegetation patterns, Arctic landscapes, Animals, Nutrient cycle, Environmental impact

50-3906

Land-water interactions: the influence of terrestrial diversity on aquatic ecosystems.

Kling, G.W., Arctic and alpine biodiversity: patterns, causes and ecosystem consequences. Edited by F.S. Chapin, III et al and Ecological studies. Vol. 113, Berlin, Springer-Verlag, 1995, p.297-310, 74 refs.

DLC QH84.1.A7

Ecosystems, Plant ecology, Tundra vegetation, Tundra terrain, Limnology, Streams, Biomass, Nutrient cycle, Geochemical cycles

50-3907

Patterns, cause, changes and consequences on biodiversity in arctic and alpine ecosystems.

Chapin, F.S., III, Körner, C., Arctic and alpine biodiversity: patterns, causes and ecosystem consequences. Edited by F.S. Chapin, III et al and Ecological studies. Vol. 113, Berlin, Springer-Verlag, 1995, p.313-320.

DLC QH84.1.A7

Ecosystems, Alpine landscapes, Arctic landscapes, Plant ecology, Vegetation patterns, Biogeography, Climatic changes, Geochemical cycles, Environmental protection

50-3908

Avalanche survival chances.

Burtscher, M., *Nature*, Oct. 6, 1994, 371(6497), p.482, 2 refs.

Avalanches, Survival, Switzerland—Alps

50-3909

Freezing of a salt solution in a packed bed.

Chellaiah, S., Singh, H., *Journal of offshore mechanics and arctic engineering*, Feb. 1996, 118(1), p.79-85, 20 refs. For another source see 50-2956.

Ice physics, Solutions, Salt water, Solidification, Freezing front, Freezing rate, Convection, Temperature distribution, Phase transformations, Porous materials, Mechanical tests, Thermal diffusion

50-3910

Field guide to the Churchill region, Manitoba—glaciations, sea level changes, permafrost landforms, and archeology of the Churchill and Gillam areas.

Dredge, L.A., Canada. Geological Survey. Miscellaneous report No. 53, Ottawa, 1992, 52p., With French summary. 21 refs.

DLC QE185.A44

Manuals, Geological surveys, Subarctic landscapes, Landscape types, Tundra terrain, Glacial geology, Quaternary deposits, Geologic structures, Geomorphology, Periglacial processes, Permafrost surveys, Canada—Manitoba—Churchill

50-3911

Glacial dispersion and till geochemistry around the Lar Cu-Zn deposit, Lynn Lake Greenstone Belt, Manitoba.

Nielsen, E., Conley, G.G., Canada. Manitoba. Energy and Mines Geological Services. Open file report No.91-4, Winnipeg, 1991, 45p., 22 refs.

DLC QE579.N55

Glacial geology, Glacial deposits, Bedrock, Geochemistry, Dispersions, Mapping, Sampling, Mining, Metals, Exploration, Canada—Manitoba

50-3912

Synopsis of Alaska wetland vegetation.

Batten, A.R., Alaska: Regional Wetland Functions Workshop, Anchorage, AK, May 28-29, 1986. Proceedings and University of Massachusetts. Environmental Institute publication. No.90-1, Amherst, 1986, p.23-44, Refs. p.39-44.

DLC QH105.A4 A73

Wetlands, Classifications, Distribution, Permafrost hydrology, Permafrost distribution, Vegetation patterns, Ecosystems, United States—Alaska

50-3913

Oil and gas waste management issues and recommendations for the Arctic National Wildlife Refuge.

Alaska. Department of Environmental Conservation. Division of Environmental Quality, Juneau, Nov. 1990, 150p. + attachment, Refs. p.129-150.

DLC TD899.P4 A43

Petroleum industry, Arctic landscapes, Oil wells, Economic development, Waste disposal, Waste treatment, Surface drainage, Oil spills, Ecology, Air pollution, Environmental impact, Environmental protection, Standards, Countermeasures, Snow disposal, Climatic factors, United States—Alaska—Arctic National Wildlife Refuge

50-3914

Symposium on Environmental Toxicology and Risk Assessment, 3rd, Atlanta, GA, Apr. 26-28, 1993. Exxon Valdez oil spill: fate and effects in Alaska waters. American Society for Testing and Materials. Special publication No.1219, Ann Arbor, Michigan, Oct. 1995, 955p., Refs. passim. For selected papers see 50-3914 through 50-3926.

DLC QH545.O5 E95

Oceanography, Marine biology, Ecology, Biomass, Oil spills, Shores, Sediments, Degradation, Weathering, Water pollution, Environmental impact, Environmental tests, Sampling, Statistical analysis, United States—Alaska—Prince William Sound

50-3915

Identification of hydrocarbon sources in the benthic sediments of Prince William Sound and the Gulf of Alaska following the *Exxon Valdez* oil spill.

Page, D.S., Boehm, P.D., Douglas, G.S., Bence, A.E., Symposium on Environmental Toxicology and Risk Assessment, 3rd, Atlanta, GA, Apr. 26-28, 1993. *Exxon Valdez* oil spill: fate and effects in Alaskan waters. Edited by P.G. Wells et al and American Society for Testing and Materials. Special publication No.1219, Ann Arbor, Michigan, Oct. 1995, p.41-83, Refs. p.77-83.

DLC QH545.O5 E95

Oceanography, Bottom sediment, Hydrocarbons, Crude oil, Oil spills, Water pollution, Sampling, Turbulent diffusion, Degradation, Environmental tests, Chemical analysis, United States—Alaska—Prince William Sound

50-3916

Fingerprinting hydrocarbons in the biological resources of the *Exxon Valdez* spill area.

Bence, A.E., Burns, W.A., Symposium on Environmental Toxicology and Risk Assessment, 3rd, Atlanta, GA, Apr. 26-28, 1993. *Exxon Valdez* oil spill: fate and effects in Alaskan waters. Edited by P.G. Wells et al and American Society for Testing and Materials. Special publication No.1219, Ann Arbor, Michigan, Oct. 1995, p.84-140, Refs. p.133-140.

DLC QH545.O5 E95

Oceanography, Oil spills, Hydrocarbons, Crude oil, Water pollution, Marine biology, Biomass, Sampling, Origin, Degradation, Chemical analysis, Environmental tests, United States—Alaska—Prince William Sound

50-3917

Chemical and toxicological evaluation of water quality following the *Exxon Valdez* oil spill.

Neff, J.M., Stubblefield, W.A., Symposium on Environmental Toxicology and Risk Assessment, 3rd, Atlanta, GA, Apr. 26-28, 1993. *Exxon Valdez* oil spill: fate and effects in Alaskan waters. Edited by P.G. Wells et al and American Society for Testing and Materials. Special publication No.1219, Ann Arbor, Michigan, Oct. 1995, p.141-177, Refs. p.171-177.

DLC QH545.O5 E95

Oceanography, Oil spills, Hydrocarbons, Water pollution, Marine biology, Environmental tests, Environmental impact, Sea water, Sampling, Chemical analysis, Degradation, United States—Alaska—Prince William Sound

50-3918

Clay-oil flocculation and its role in natural cleansing in Prince William Sound following the *Exxon Valdez* oil spill.

Bragg, J.R., Yang, S.H., Symposium on Environmental Toxicology and Risk Assessment, 3rd, Atlanta, GA, Apr. 26-28, 1993. *Exxon Valdez* oil spill: fate and effects in Alaskan waters. Edited by P.G. Wells et al and American Society for Testing and Materials. Special publication No.1219, Ann Arbor, Michigan, Oct. 1995, p.178-214, Refs. p.211-214.

DLC QH545.O5 E95

Oceanography, Oil spills, Water pollution, Soil pollution, Beaches, Sediments, Colloids, Sediments, Dispersions, Hydrocarbons, Geochemistry, Environmental impact, Environmental tests, Degradation, United States—Alaska—Prince William Sound

50-3919

Sheen surveillance: an environmental monitoring program subsequent to the 1989 *Exxon Valdez* shoreline cleanup.

Taft, D.G., Egging, D.E., Kuhn, H.A., Symposium on Environmental Toxicology and Risk Assessment, 3rd, Atlanta, GA, Apr. 26-28, 1993. *Exxon Valdez* oil spill: fate and effects in Alaskan waters. Edited by P.G. Wells et al and American Society for Testing and Materials. Special publication No.1219, Ann Arbor, Michigan, Oct. 1995, p.215-238, 16 refs.

DLC QH545.O5 E95

Oceanography, Beaches, Oil spills, Sea water, Crude oil, Films, Dispersions, Detection, Aerial surveys, Monitors, Environmental impact, United States—Alaska—Prince William Sound

50-3920

Use of mussels and semipermeable membrane devices to assess bioavailability of residual polynuclear aromatic hydrocarbons three years after the *Exxon Valdez* oil spill.

Shigenaka, G., Henry, C.B., Jr., Symposium on Environmental Toxicology and Risk Assessment, 3rd, Atlanta, GA, Apr. 26-28, 1993. *Exxon Valdez* oil spill: fate and effects in Alaskan waters. Edited by P.G. Wells et al and American Society for Testing and Materials. Special publication No.1219, Ann Arbor, Michigan, Oct. 1995, p.239-260, 20 refs.

DLC QH545.O5 E95

Oceanography, Beaches, Sediments, Littoral zone, Oil spills, Hydrocarbons, Water pollution, Biomass, Marine biology, Environmental impact, Environmental tests, Sampling, United States—Alaska—Prince William Sound

50-3921

Shoreline ecology program for Prince Wiliam Sound, Alaska, following the *Exxon Valdez* oil spill: part 1—study design and methods.

Page, D.S., Gilfillan, E.S., Boehm, P.D., Harner, E.J., Symposium on Environmental Toxicology and Risk Assessment, 3rd, Atlanta, GA, Apr. 26-28, 1993. *Exxon Valdez* oil spill: fate and effects in Alaskan waters. Edited by P.G. Wells et al and American Society for Testing and Materials. Special publication No.1219, Ann Arbor, Michigan, Oct. 1995, p.263-295, Refs. p.291-295.

DLC QH545.O5 E95

Oceanography, Oil spills, Hydrocarbons, Water pollution, Beaches, Sediments, Environmental impact, Environmental tests, Environmental protection, Sampling, Ecology, Statistical analysis, Models, United States—Alaska—Prince William Sound

50-3922

Survey design, statistical analysis, and basis for statistical inferences in coastal habitat injury assessment: *Exxon Valdez* oil spill.

McDonald, L.L., Erickson, W.P., Strickland, M.D., Symposium on Environmental Toxicology and Risk Assessment, 3rd, Atlanta, GA, Apr. 26-28, 1993. *Exxon Valdez* oil spill: fate and effects in Alaskan waters. Edited by P.G. Wells et al and American Society for Testing and Materials. Special publication No.1219, Ann Arbor, Michigan, Oct. 1995, p.296-311, 25 refs.

DLC QH545.O5 E95

Oceanography, Marine biology, Biomass, Oil spills, Water pollution, Shores, Littoral zone, Sampling, Environmental impact, Statistical analysis, Analysis (mathematics), United States—Alaska—Prince William Sound

50-3923

Shoreline oiling conditions in Prince William Sound following the *Exxon Valdez* oil spill.

Neff, J.M., Owens, E.H., Stoker, S.W., McCormick, D.M., Symposium on Environmental Toxicology and Risk Assessment, 3rd, Atlanta, GA, Apr. 26-28, 1993. *Exxon Valdez* oil spill: fate and effects in Alaskan waters. Edited by P.G. Wells et al and American Society for Testing and Materials. Special publication No.1219, Ann Arbor, Michigan, Oct. 1995, p.312-346, 27 refs.

DLC QH545.O5 E95

Oceanography, Beaches, Oil spills, Distribution, Surveys, Hydrocarbons, Degradation, Water pollution, Environmental impact, Environmental protection, United States—Alaska—Prince William Sound

50-3924

Shoreline ecology program for Prince William Sound, Alaska, following the *Exxon Valdez* oil spill: part 2—chemistry and toxicology.

Boehm, P.D., Page, D.S., Gilfillan, E.S., Stubblefield, W.A., Harner, E.J., Symposium on Environmental Toxicology and Risk Assessment, 3rd, Atlanta, GA, Apr. 26-28, 1993. *Exxon Valdez* oil spill: fate and effects in Alaskan waters. Edited by P.G. Wells et al and American Society for Testing and Materials. Special publication No.1219, Ann Arbor, Michigan, Oct. 1995, p.347-397, Refs. p.386-391.

DLC QH545.O5 E95

Oceanography, Oil spills, Water pollution, Beaches, Littoral zone, Ecology, Hydrocarbons, Degradation, Environmental tests, Sediments, Sampling, Chemical analysis, United States—Alaska—Prince William Sound

50-3925

Shoreline ecology program for Prince William Sound, Alaska, following the *Exxon Valdez* oil spill: part 3—biology.

Gilfillan, E.S., Page, D.S., Harner, E.J., Boehm, P.D., Symposium on Environmental Toxicology and Risk Assessment, 3rd, Atlanta, GA, Apr. 26-28, 1993. *Exxon Valdez* oil spill: fate and effects in Alaskan waters. Edited by P.G. Wells et al and American Society for Testing and Materials. Special publication No.1219, Ann Arbor, Michigan, Oct. 1995, p.398-443, Refs. p.438-443.

DLC QH545.O5 E95

Oceanography, Oil spills, Water pollution, Beaches, Littoral zone, Marine biology, Ecology, Biomass, Sediments, Environmental impact, Sampling, Statistical analysis, United States—Alaska—Prince William Sound

50-3926

Shoreline impacts in the Gulf of Alaska region following the *Exxon Valdez* oil spill.

Gilfillan, E.S., Suchanek, T.H., Boehm, P.D., Harner, E.J., Page, D.S., Sloan, N.A., Symposium on Environmental Toxicology and Risk Assessment, 3rd, Atlanta, GA, Apr. 26-28, 1993. *Exxon Valdez* oil spill: fate and effects in Alaskan waters. Edited by P.G. Wells et al and American Society for Testing and Materials. Special publication No.1219, Ann Arbor, Michigan, Oct. 1995, p.444-481, Refs. p.478-481.

DLC QH545.O5 E95

Oceanography, Oil spills, Water pollution, Hydrocarbons, Beaches, Sediments, Weathering, Ecology, Biomass, Environmental impact, Environmental tests, Sampling, United States—Alaska—Alaska, Gulf

50-3927

Ice: the antarctic diary of Charles F. Passel.

Passel, C.F., Lubbock, TX, Texas Tech University Press, 1995, 401p., Edited by T.H. Baughman.

DLC G850 1939.P38.P38 1995

Expeditions, Antarctica—Ross Ice Shelf

The diary is one kept by a geologist of the West Base Unit of the expedition under the overall direction of Adm. Richard E. Byrd. It was this expedition which marked the start of big government expeditions when FDR urged that two separate expeditions then being planned be combined into a single effort and funded by the federal government. In addition to the expected accounts of the ability of men, animals, and machines to survive, cope, and function under the grim antarctic climatic regime, there are entries describing stops along the seaways that resemble the beginning of a Cook's Tour of the tropical Pacific. However, once beyond New Zealand ice floes appeared, reality returned, and the Expedition settled down to the business at hand. Adding much to the narrative, Passel's photographs cover numerous aspects of the Expedition, including a sequence of the off-loading in Antarctica of the ill-fated Snow Cruiser.

50-3928

Palmer Station docking facility. Conceptual engineering study.

ITT Antarctic Services, Inc., New York, Han-Padron Associates, May 1986, var.p.

Docks, Cold weather construction, Antarctica—Palmer Station

This study was made to determine the requirements for upgraded dock space at Palmer Station to accommodate the much larger supply/research/icebreaker vessel which replaces the now retired *Hero*. Five alternative concepts were considered; the recommended alternative provides for a prefabricated jack-up structure, towed to the site and jacked into position on large-diameter steel legs.

50-3929

Ice wharves sampling and analysis plan for ocean dumping, McMurdo Station, Antarctica.

Crockett, A.B., U.S. Department of Energy and U.S. National Science Foundation. Interagency Agreement No. DPP-9102787, Washington, Nov. 1993, 11p., Unpublished manuscript. 6 refs.

Wharves, Impurities, Chemical analysis, Pollution, Waste disposal, Antarctica—McMurdo Station

A sampling and analysis plan, designed to support ocean dumping of McMurdo Station ice wharves under a U.S. Environmental Protection Agency (EPA) Ocean Dumping Permit, is described. Sampling of residual cover soil and ice will be conducted by Antarctic Support Associates (ASA) for the National Science Foundation (NSF), Office of Polar Programs (OPP). The objective of this effort is to determine whether soil and ice comprising McMurdo Station ice wharves are contaminated with hydrocarbons to a level that would not allow for ocean disposal of the ice wharf when it has reached the end of its useful life.

50-3930

Witness the Arctic, vol.3, no.1.

Arctic Research Consortium of the United States, Fairbanks, 1996, 16p.

Oceanography, Climatology, Oceanographic surveys, Research projects, International cooperation, Arctic Ocean

50-3931

Nuclear submarines and oceanography in the Arctic.

DeLaca, T., Gossett, J., *Witness the Arctic,* 1996, 3(1), p.1-2.

Oceanography, Research projects, Submarines, Geophysical surveys, Oceanographic surveys, Ice conditions, Sampling, Subglacial observations, Arctic Ocean

50-3932

International Arctic Buoy Program Meeting in Oslo.

Dugan, J.P., *ESN information bulletin,* 1992, No.8, p.532-534.

Oceanography, Marine meteorology, Drift stations, Performance, Weather forecasting, International cooperation, Meetings, Arctic Ocean

50-3933

Plume of the Yukon River in relation to the oceanography of the Bering Sea.

Dean, K.G., McRoy, C.P., Ahlnäs, K., Springer, A., *Remote sensing of environment,* Apr.-June 1989, Vol.28, p.75-84,169-172, 18 refs.

Oceanography, Remote sensing, Spaceborne photography, Radiometry, Surface temperature, Ocean currents, Estuaries, Suspended sediments, Turbidity, Turbulent diffusion, Seasonal variations, Bering Sea

50-3934

Application of satellite visible band data to high latitude oceans.

Ahlnäs, K., Royer, T.C., *Remote sensing of environment,* Apr.-June 1989, Vol.28, p.85-93,173-176, 22 refs.

Oceanography, Remote sensing, LANDSAT, Spaceborne photography, Ocean currents, Meltwater, Boundary layer, Suspended sediments, Turbulent diffusion, Salinity

50-3935

Applications of Landsat Thematic Mapper and ground-based spectrometer data to a study of the Skaergaard and other mafic intrusions of East Greenland.

Birnie, R.W., Parr, J.T., Naslund, H.R., Nichols, J.D., Turner, P.A., *Remote sensing of environment,* Apr.-June 1989, Vol.28, p.297-304,192-193, 13 refs.

Geological surveys, Arctic landscapes, Remote sensing, LANDSAT, Radiometry, Image processing, Resolution, Geologic structures, Lithology, Mineralogy, Sensor mapping, Snow cover effect, Accuracy, Greenland

50-3936

Partial disintegration of antarctic ice. [Desintegração de parte do gelo antártico]

Simões, J.C., *Informativo CIRM,* Jan./June 1995, 7(1), p.3-4, In Portuguese.

Icebergs, Sea ice distribution, Ice shelves, Calving, Ice breakup, Antarctica—Larsen Ice Shelf, Antarctica—Weddell Sea

An account is given of phenomena of ice disintegration beginning on Jan. 22, 1994, at approximately 300 km south of the Comandante Ferraz Station, and resulting in thousands of ice fragments, some 200-300 m thick. By Mar. 22nd, the fragments had formed into normal-sized icebergs floating in the Weddell Sea. Some of the consequences, such as the re-distribution of the sea ice affecting various stations in the area, are described.

50-3937

Glacier retreat and raised marine beaches at Three Sisters Point, King George Island (South Shetland Islands, West Antarctica).

Birkenmajer, K., *Polish Academy of Sciences. Bulletin. Earth sciences,* 1995, 43(2), p.135-141, 15 refs.

Glacial geology, Beaches, Geomorphology, Geochronology, Glacier oscillation, Antarctica—Three Sisters Point

Raised marine beaches at Three Sisters Point occur at the following altitudes: 45, 40, 35, 30, 25, and 20 m a.s.l. Based on comparison with radiocarbon-dated raised beaches at Admiralty Bay and Maxwell Bay on King George I., they represent a nearly continuous succession of isostatically uplifted marine shorelines of Middle to Late Holocene age. The glacier advanced over the raised beaches (45-20 m) down to sea level, probably during the 18th century, based on comparison with lichenometrically-dated maximum glacier advance at Lions Rump, King George Bay. The glacier front retreated considerably between 1980 and 1994, exposing raised marine beaches and new bedrock sites that were still covered by ice in 1979. (Auth.)

50-3938

Electrification of snowstorms.

Latham, J., Stow, C.D., *Nature,* Apr. 18, 1964, 202(4929), p.284-285, 4 refs.

Snowstorms, Blowing snow, Snow electrical properties, Cloud electrification, Charge transfer

50-3939

Characterization of PM-10 emissions from antiskid materials applied to ice- and snow-covered roadways. Phase 2.

Kinsey, J.S., *U.S. Environmental Protection Agency. Report,* Aug. 1995, EPA/600/R-95/119, Var. p., PB95-260402, 20 refs. For Phase 1 see 47-4617.

Road maintenance, Road icing, Salting, Sanding, Environmental impact, Air pollution

50-3940

Calculation of sub-mm wave attenuation based on observations of snowflakes and falling velocities.

Suzuki, M., Sha, K., Ebihara, H., Akiba, T., Antena denpan kenkyukai (Antenna propagation meeting), AP 79-75, Tokyo, Denshi tsushin gakkai (Institute of Electronics and Communications Engineers of Japan), Oct. 1979, p.25-30, In Japanese. 11 refs.

Falling snow, Snowflakes, Snow electrical properties, Radiometry, Microwaves, Wave propagation, Radar echoes, Attenuation, Mathematical models

50-3941

Nearshore geotechnical and environmental properties in arctic regions.

Clausner, J.E., Herrmann, H.G., *U.S. Naval Civil Engineering Laboratory, Port Hueneme, CA. Technical memorandum,* Mar. 1978, TM-42-78-5, 37p., 42 refs.

Ocean bottom, Bottom sediment, Ice scoring, Subsea permafrost, Frozen ground strength, Trenching, Marine geology, Engineering geology

50-3942

Problems concerning the variations of ρ_e (equivalent reflection coefficient) in microwave propagation over snow-covered terrain.

Suzuki, M., *Electrotechnical journal (ETJ) of Japan,* Dec. 1956, p.104-107, 5 refs.

Snow cover effect, Snow electrical properties, Ice dielectrics, Microwaves, Wave propagation, Radar echoes, Mathematical models

50-3943

Thermal effects of the ocean on permafrost.

Lachenbruch, A.H., *Geological Society of America. Bulletin,* Nov. 1957, Vol.68, p.1515-1530, 15 refs.

Subsea permafrost, Permafrost distribution, Permafrost thermal properties, Permafrost heat balance, Permafrost heat transfer, Geothermy, Marine geology, Mathematical models

50-3944

Field station for physical geography in Kebnekajse, Swedish Lapland. [Naturgeografisk fältstation i Kebnekajse]

Schytt, V., *Svensk Naturvetenskap,* 1962, p.332-345, In Swedish with English summary and captions.

Stations, Glacier surveys, Glacier oscillation, Glacier mass balance, Sweden

50-3945

Electrification produced by the growth of soft hail in thunderclouds.

Latham, J., *Tellus,* 1965, 17(2), p.204-212, 20 refs.

Hailstone growth, Hailstone electrification, Hail clouds, Cloud physics, Cloud electrification, Thunderstorms

50-3946

Mass loss of water drops falling in electric fields.
Latham, J., *Royal Meteorological Society. Quarterly journal,* Jan. 1965, 91(387), p.87-90, 6 refs.
Cloud electrification, Cloud physics, Cloud droplets, Thunderstorms

50-3947

Electrification of blowing snow.
Latham, J., Stow, C.D., *Meteorological Society of Japan. Journal,* Feb. 1965, 43(1), p.23-29, With Japanese summary. 30 refs.
Snowstorms, Blowing snow, Snow electrical properties, Snow temperature, Temperature gradients, Charge transfer

50-3948

Electrification of frost deposits.
Vonnegut, B., *Royal Meteorological Society. Quarterly journal,* July 1965, 91(389), p.369-374, Refs. passim. Comment on a paper by J. Latham with a reply and a comment on the reply. For paper under discussion see 20-23221.
Cloud electrification, Cloud physics, Ice crystal collision, Thunderstorms

50-3949

Role of ice specimen geometry and impact velocity in the Reynolds-Brook theory of thunderstorm electrification.
Latham, J., Miller, A.H., *Journal of the atmospheric sciences,* Sep. 1965, 22(5), p.505-508, 16 refs.
Ice electrical properties, Ice crystal size, Ice crystal collision, Charge transfer, Cloud electrification, Cloud physics, Thunderstorms

50-3950

Electrification associated with the evaporation of ice.
Latham, J., Stow, C.D., *Journal of the atmospheric sciences,* May 1965, 22(3), p.320-324, 10 refs.
Ice electrical properties, Ice sublimation, Cloud electrification, Cloud physics

50-3951

Effect of air bubbles in ice on charge transfer produced by asymmetric rubbing.
Latham, J., *Journal of the atmospheric sciences,* May 1965, 22(3), p.325-328, 9 refs.
Ice electrical properties, Ice crystal collision, Bubbles, Temperature gradients, Charge transfer, Cloud electrification, Cloud physics

50-3952

Survey of calving causing flood waves at the Grubengletscher. [Überwachung von Kalbungsflutwellen am Grubengletscher]
Haeberli, W., *Schweizerische Bauzeitung,* Oct. 1975, 93(43), p.2-4, In German with English summary. 8 refs.
Glacial lakes, Lake bursts, Calving, Water waves, Floods, Avalanches, Switzerland

50-3953

Turbulent transfer over an antarctic ice shelf.
Vinje, T.E., *Norsk Polarinstitutt. Skrifter,* 1969, No.148, 55p., With Russian summary. 38 refs.
Ice shelves, Ice air interface, Snow air interface, Ice heat flux, Snow heat flux, Glacial meteorology, Atmospheric boundary layer, Turbulent exchange, Wind velocity, Air temperature, Temperature inversions, Antarctica—Fimbul Ice Shelf

50-3954

Evaluation of ice management problems associated with operation of a mechanical ice cutter on the Mississippi River.
Ashton, G.D., MP 3804, Hanover, NH, U.S. Army Cold Regions Research and Engineering Laboratory, Dec. 1973, 43p. + appends., 29 refs. For another version see 32-2600.
River ice, Ice control, Ice cutting, Ice breaking, Ice navigation

50-3955

Radiative properties of snow for clear sky solar radiation.
Choudhury, B.J., Computer Sciences Corporation. Task report CSC/TR-79/6025, Greenbelt, MD, U.S. National Aeronautics and Space Administration, Goddard Space Flight Center, 1979, Var. p., 37 refs. For another version see 35-3667.
Snow air interface, Snow heat flux, Snow optics, Albedo, Solar radiation, Radiation balance, Mathematical models

50-3956

History of ancient copper smelting pollution during Roman and Medieval times recorded in Greenland ice.
Hong, S.M., Candelone, J.P., Patterson, C.C., Boutron, C.F., *Science,* Apr. 12, 1996, 272(5259), p.246-249, 23 refs.
Air pollution, Ice cores, Copper, Smelting, Greenland

50-3957

Light scattering by randomly oriented hexagonal ice crystals: improved diffraction computations and diffraction properties of ice crystals.
Xu, L., Zhang, J., *Optik,* Feb. 1996, 101(4), p.161-165, With German summary. 8 refs.
Clouds (meteorology), Cloud physics, Light scattering, Ice crystal optics, Ice crystal size, Analysis (mathematics)

50-3958

Cooperative polarisation in ice I_h and the unusual strength of the hydrogen bond.
Heggie, M.I., Latham, C.D., Maynard, S.C.P., Jones, R., *Chemical physics letters,* Feb. 9, 1996, 249(5-6), p.485-490, 25 refs.
Ice physics, Ice structure, Hydrogen bonds, Orientation, Molecular structure, Defects, Polarization (charge separation), Molecular energy levels, Thermodynamics, Analysis (mathematics), Models

50-3959

Antifreeze glycopeptides and peptides in Antarctic fish species from the Weddell Sea and the Lazarev Sea.
Wöhrmann, A.P.A., *Marine ecology progress series,* Jan. 11, 1996, 130(1-3), p.47-59, Refs. p.57-59.
Marine biology, Biomass, Sampling, Antifreezes, Classifications, Chemical analysis, Freezing points, Ecology, Antarctica—Weddell Sea

Antifreeze glycopeptides and peptides have been isolated from 37 species of antarctic fish representing the families Nototheniidae, Artedidraconidae, Bathydraconidae, Channichthyidae, Muraenolepididae, Liparididae, Zoarcidae and Myctophidae. Amino acid and carbohydrate analysis as well as antifreeze activity indicate that all investigated notothenioids contain antifreeze glycopeptides (AFGP). *Pleuragramma antarcticum, Lepidonotothen kempi, Bathydraco marri* and *Dolloidraco longedorsalis* synthesize additional antifreeze molecules. The non-notothenioid species possess antifreeze peptides (AFP), except *Muraenolepis marmaratus* and *Macrourus holotrachys,* which possess a glycosylated antifreeze peptide similar to the AFGP found in the notothenioid species. A novel glycopeptide comprised of the carbohydrate residue N-acetylglucosamine and the amino acids asparagine, glutamine, glycine, alanine, and traces of arginine, valine, leucine and threonine was isolated and characterized from *P. antarcticum.* The level of antifreeze concentration was dependent on the ambient water temperature, the depth of catch and life cycle of the species. The structural diversity of antifreeze molecules and their occurrence in a wide range of arctic and antarctic fish species suggest that they evolved from precursor proteins before the continental drift and recently during Cenozoic glaciation into the various antifreeze molecules. (Auth. mod.)

50-3960

Urban hailstorms: a view from Alberta.
Charlton, R.B., Kachman, B.M., Wojtiw, L., *Natural hazards,* July 1995, 12(1), p.29-75, Refs. p.72-75.
Precipitation (meteorology), Ice storms, Hail, Hailstones, Damage, Environmental impact, Statistical analysis, Economic analysis, Weather observations, Canada—Alberta

50-3961

Historical record of blizzards/major snow events in the British Isles, 1880-1989.
Wild, R., O'Hare, G., Wilby, R., *Weather,* Mar. 1996, 51(3), p.82-91, 20 refs.
Climatology, Precipitation (meteorology), Snowstorms, Synoptic meteorology, Periodic variations, History, Weather observations, United Kingdom

50-3962

Hailstorm in Hong Kong.
Lee, B.Y., Cheng, C.M., Tai, S.C., *Weather,* Mar. 1996, 51(3), p.91-94,97, 6 refs.
Precipitation (meteorology), Climatology, Ice storms, Hail, Sounding, Turbulent boundary layer, Wind direction, Hong Kong

50-3963

On the relationship between the quasi-biennial oscillation, total chlorine and the severity of the antarctic ozone hole.
Butchart, N., Austin, J., *Royal Meteorological Society. Quarterly journal A,* Jan. 1996, 122(529), p.183-217, 38 refs.
Climatology, Polar atmospheres, Polar stratospheric clouds, Ozone, Atmospheric circulation, Cloud dissipation, Wind factors, Seasonal variations, Aerosols, Photochemical reactions, Mathematical models

A 3-dimensional model of the dynamics and radiation of the stratosphere and mesosphere is used to simulate austral spring conditions. An idealized representation of the Southern Hemisphere planetary waves is prescribed at the 316 mb model lower boundary, and the tropical zonal winds are relaxed towards an idealized time-dependent representation of the quasi-biennial oscillation (QBO). For the QBO phase giving lowest temperatures the simulated ozone holes are consistently deeper but with reduced sensitivity for high chlorine amounts. Differences in polar ozone amounts between the two phases are comparable with the observed interannual variability. In the model the results show that the QBO modulates the severity of the antarctic ozone hole directly through the wave-induced transporting circulation rather than indirectly through the temperature-dependent heterogeneous chemistry. Further, it is argued that the phases of the QBO producing the two extreme responses in the springtime ozone amounts over Antarctica are likely to depend on details of the tropospheric planetary-wave flux. The model results are also shown to be consistent with the observed downward trend in Oct. antarctic temperatures since 1979. (Auth. mod.)

50-3964

Study of absorption features in the 3 micron spectra of molecular cloud sources with H_2O ice bands.
Brooke, T.Y., Sellgren, K., Smith, R.G., *Astrophysical journal,* Mar. 1, 1996, 459(1)pt.1, p.209-215, 20 refs.
Extraterrestrial ice, Cosmic dust, Optical properties, Remote sensing, Infrared spectroscopy, Ice detection, Radiation absorption, Spectra

50-3965

Multiple-parameter radar observations of isolated Florida thunderstorms during the onset of electrification.
Jameson, A.R., Murphy, M.J., Krider, E.P., *Journal of applied meteorology,* Mar. 1996, 35(3), p.343-354, 54 refs.
Precipitation (meteorology), Thunderstorms, Cloud physics, Cloud electrification, Radar echoes, Sounding, Ice formation, Ice crystal collision, Snow pellets, Charge transfer, Ice electrical properties

50-3966

Microsporogenesis of the Siberian larch in western Siberian Zapolyar'e.
Rozhdestvenskiĭ, IU.F., Semerikov, L.F., *Russian journal of ecology,* July-Aug. 1995, 26(4), p.237-241, Translated from Ecologiia. 8 refs.
Forest ecosystems, Plant ecology, Subarctic landscapes, Tundra terrain, Trees (plants), Plant physiology, Pollen, Sampling, Growth, Temperature effects, Cold weather survival, Russia—Siberia

50-3967

Thickness determination of a water film on dye-doped ice by fluorescence spectroscopy.
Strausky, H., Krenn, J.R., Leitner, A., Aussenegg, F.R., *Applied optics,* Jan. 1, 1996, 35(1), p.198-200, 9 refs.
Ice physics, Ice optics, Water films, Thickness, Solid phases, Ice water interface, Ice spectroscopy, Spectra, Radiation absorption

50-3968

Observation of a new absorption band of HOBr and its atmospheric implications.

Barnes, R.J., Lock, M., Coleman, J., Sinha, A., *Journal of physical chemistry,* Jan. 11, 1996, 100(2), p.453-457, 25 refs.

Polar atmospheres, Climatic factors, Stratosphere, Aerosols, Heterogeneous nucleation, Ozone, Radiation absorption, Photochemical reactions, Spectra, Simulation

In a study relating to ozone depletion, a new absorption band of HOBr centered near 440 nm was detected by monitoring the yield of OH radicals as the wavelength of an excitation laser is scanned over the region from 440 to 650 nm. The band is believed to arise from excitation to a triplet state of HOBr, and although its peak absorption cross section is fairly modest, its influence on determining the photochemical lifetime of HOBr is largely due to its proximity to the peak of the solar actinic flux. Preliminary estimates suggest that inclusion of absorption by this new band system will shorten the photochemical lifetime of tropospheric HOBr in the polar regions by a factor of 2 compared to the recently recommended value based on the near-UV absorption bands alone. (Auth. mod.)

50-3969

Effect of snow cover anomaly on global climate. [Vliianie anomaliĭ snezhnogo pokrova na global'nyĭ klimat]

Krenke, A.N., Prigarin, V.E., Turkov, D.V., *Rossiĭskaia akademiia nauk. Izvestiia. Seriia geograficheskaia,* May-June 1995, No.3, p.25-36, In Russian with English summary. 24 refs.

Snow cover effect, Global change, Climatic changes, Models, Ice cover effect, Air temperature, Albedo

50-3970

Stability of tundra ecosystems and forecasting their reaction to anthropogenic transformation. [Ustoĭchivost' tundrovykh ekosistem i prognozirovanie posledstviĭ ikh antropogennoĭ transformatsii]

Vil'chek, G.E., *Rossiĭskaia akademiia nauk. Izvestiia. Seriia geograficheskaia,* May-June 1995, No.3, p.59-69, In Russian with English summary. 41 refs.

Ecosystems, Environmental impact, Forecasting, Tundra vegetation, Tundra terrain, Arctic landscapes

50-3971

Biogeochemistry of heavy metals in the Arctic. [Biogeokhimiia tiazhelykh metallov v Arktike]

Dobrovol'skiĭ, V.V., *Moscow. Universitet. Vestnik. Seriia 17: Pochvovedenie,* July-Aug. 1995, No.3, p.3-15, In Russian with English summary. 29 refs.

Tundra vegetation, Biomass, Precipitation (meteorology), Aerosols, Geochemistry, Environmental impact, Ions, Metals, Ecosystems, Soil pollution, Norway—Spitsbergen, Russia—Novaya Zemlya, Greenland, Russia—Franz Josef Land

50-3972

On the genesis of mountain-meadow and mountain-meadow-steppe chernozem-like soils of Tien Shan. [K voprosu o genezise gorno-lugovykh i gorno-lugovogo-stepnykh chernozemovidnykh pochv Tian'-Shania]

Evdokimova, T.I., Kovaleva, N.O., *Moscow. Universitet. Vestnik. Seriia 17: Pochvovedenie,* July-Aug. 1995, No.3, p.15-23, In Russian with English summary. 13 refs.

Chernozem, Mountain soils, Steppes, Meadow soils, Tien Shan, Kyrgyz Range

50-3973

Danger of pollution of arable soils in Russia by pesticides: an experiment in interpreting soil properties and regimes. [Opasnost' zagriazneniia pakhotnykh pochv Rossii pestitsidami: opyt interpretatsii svoĭstv i rezhimov pochv]

Bogdanova, M.D., Gerasimova, M.I., *Moscow. Universitet. Vestnik. Seriia 17: Pochvovedenie,* July-Aug. 1995, No.3, p.33-40, In Russian with English summary. 19 refs.

Permafrost, Soil pollution, Soil mechanics

50-3974

Glaciological and climatological investigation of the North Water polynya in northern Baffin Bay. North Water Project progress report VI, 1 April 1978 to 31 December 1979.

Müller, F., Berger, P., Ito, H., Ohmura, A., Schroff, K., Steffen, K., Montreal, McGill University, 1980, 123p., Unpublished report. Refs. passim. Also submitted to the Swiss Federal Institute of Technology (Eidgenössische Technische Hochschule), Zurich.

Ice surveys, Sea ice distribution, Ice heat flux, Air ice water interaction, Polynyas, Glacier surveys, Glacier mass balance, Baffin Bay

50-3975

Icefield Ranges climatology program: 1965 data presentation and programming analysis.

Marcus, M.G., Rens, F.J., Taylor, B.E., *Arctic Institute of North America. Research paper,* Apr. 1966, No.33, 111p., 8 refs.

Weather stations, Weather observations, Meteorological data, Air temperature, Precipitation (meteorology), Data processing, Computer programs, Canada—Yukon Territory—St. Elias Mountains

50-3976

Study on snowfall of intensity, grading criteria and dangerous extent of snow disaster in China.

Gu, Z.W., Liang, F.X., Zeng, Q.Z., Jin, D.M., Wang, G.Y., *Chinese Academy of Sciences. Lanzhou Institute of Glaciology and Geocryology. Memoirs,* 1995, No.8, p.1-8, In Chinese with English summary. 7 refs.

Snow cover distribution, Snowfall, Snow accumulation, Snow cover effect, Snowstorms, Accidents, Steppes, China

50-3977

Major characteristics of snow disaster in Nagqu area of Xizang.

Feng, X.Z., Zeng, Q.Z., Lu, A.X., Li, S., *Chinese Academy of Sciences. Lanzhou Institute of Glaciology and Geocryology. Memoirs,* 1995, No.8, p.9-13, In Chinese with English summary. 2 refs.

Snow cover distribution, Snow accumulation, Snow cover effect, Snowstorms, Frost forecasting, Accidents, Steppes, Statistical analysis, China—Xizang

50-3978

Study on snow disaster monitoring using remote sensing in Nagqu area of Xizang.

Feng, X.Z., Zeng, Q.Z., Chen, X.Z., Sun, W.X., Lu, A.X., Li, S., *Chinese Academy of Sciences. Lanzhou Institute of Glaciology and Geocryology. Memoirs,* 1995, No.8, p.14-22, In Chinese with English summary. 5 refs.

Snow surveys, Snow cover distribution, Terrain identification, Spaceborne photography, Image processing, Data transmission, Environment simulation, Regional planning, China—Xizang

50-3979

Background database of snow disaster in Nagqu area of Xizang.

Sun, W.X., Li, S., Feng, X.Z., *Chinese Academy of Sciences. Lanzhou Institute of Glaciology and Geocryology. Memoirs,* 1995, No.8, p.23-28, In Chinese with English summary. 4 refs.

Snow surveys, Snow cover distribution, Topographic surveys, Spaceborne photography, Data processing, Data transmission, China—Xizang

50-3980

Spatial analysis operation of background database of snow disaster.

Sun, W.X., Feng, X.Z., *Chinese Academy of Sciences. Lanzhou Institute of Glaciology and Geocryology. Memoirs,* 1995, No.8, p.29-35, In Chinese with English summary. 2 refs.

Snow surveys, Snow cover distribution, Spaceborne photography, Terrain identification, Environment simulation, Data processing, China—Xizang

50-3981

Study of extracting remote sensing information of snow disaster in Nagqu area of Xizang.

Li, Z., Feng, X.Z., Li, W.J., *Chinese Academy of Sciences. Lanzhou Institute of Glaciology and Geocryology. Memoirs,* 1995, No.8, p.36-42, In Chinese with English summary. 4 refs.

Snow surveys, Snow cover distribution, Terrain identification, Spaceborne photography, Data processing, Image processing, China—Xizang

50-3982

Studies on the methods of extracting snow information from NOAA/AVHRR image.

Li, W.J., Feng, X.Z., *Chinese Academy of Sciences. Lanzhou Institute of Glaciology and Geocryology. Memoirs,* 1995, No.8, p.43-50, In Chinese with English summary. 3 refs.

Snow surveys, Snow cover distribution, Terrain identification, Spaceborne photography, Data processing, Image processing, China—Xizang

50-3983

Application of DTM to extraction of snowcover information from NOAA/AVHRR image.

Feng, X.Z., Li, W.J., Lu, A.X., Sun, W.X., *Chinese Academy of Sciences. Lanzhou Institute of Glaciology and Geocryology. Memoirs,* 1995, No.8, p.51-55, In Chinese with English summary. 6 refs.

Snow surveys, Snow cover distribution, Terrain identification, Topographic surveys, Spaceborne photography, Data processing, Image processing, China—Xizang

50-3984

Synthetic analysis method of snow depth in Nagqu area of Xizang.

Zeng, Q.Z., Feng, X.Z., Li, Z., Li, X., *Chinese Academy of Sciences. Lanzhou Institute of Glaciology and Geocryology. Memoirs,* 1995, No.8, p.56-61, In Chinese with English summary. 6 refs.

Snow surveys, Snow depth, Snow cover distribution, Spaceborne photography, Image processing, Data processing, China—Xizang

50-3985

Digital terrain information and its application in Nagqu area of Xizang.

Lu, A.X., Feng, X.Z., *Chinese Academy of Sciences. Lanzhou Institute of Glaciology and Geocryology. Memoirs,* 1995, No.8, p.62-67, In Chinese with English summary. 3 refs.

Snow surveys, Snow cover distribution, Topographic surveys, Terrain identification, Spaceborne photography, Data processing, Image processing, Regional planning, China—Xizang

50-3986

Model of discriminant analysis and its application to snow disaster monitoring using NOAA/AVHRR data in Nagqu area of Xizang.

Feng, X.Z., Lu, A.X., *Chinese Academy of Sciences. Lanzhou Institute of Glaciology and Geocryology. Memoirs,* 1995, No.8, p.68-73, In Chinese with English summary. 2 refs.

Snow surveys, Snow cover distribution, Spaceborne photography, Environment simulation, Image processing, Data processing, China—Xizang

50-3987

Model of predicting snow disaster using NOAA/AVHRR data in Nagqu area of Xizang.

Lu, A.X., Feng, X.Z., *Chinese Academy of Sciences. Lanzhou Institute of Glaciology and Geocryology. Memoirs,* 1995, No.8, p.74-81, In Chinese with English summary. 4 refs.

Snow surveys, Snow cover distribution, Snow depth, Air temperature, Environment simulation, Spaceborne photography, Image processing, Data processing, China—Xizang

50-3988

Model of snow disaster assessment using NOAA/AVHRR data in Nagqu area of Xizang.

Feng, X.Z., Zeng, Q.Z., Lu, A.X., Li, W.J., Sun, W.X., Wang, L.H., *Chinese Academy of Sciences. Lanzhou Institute of Glaciology and Geocryology. Memoirs,* 1995, No.8, p.82-90, In Chinese with English summary. 5 refs.

Snow surveys, Snow cover distribution, Snowstorms, Accidents, Cost analysis, Spaceborne photography, Data processing, Environment simulation, Statistical analysis, China—Xizang

50-3989

Applications of fuzzy cluster analysis to integrated assessment of snow disaster.

Feng, X.Z., Lu, A.X., Zeng, Q.Z., Li, W.J., Sun, W.X., Wang, L.H., *Chinese Academy of Sciences. Lanzhou Institute of Glaciology and Geocryology. Memoirs,* 1995, No.8, p.91-97, In Chinese with English summary. 7 refs.

Snowstorms, Frost forecasting, Data processing, Statistical analysis, China—Xizang

50-3990

Output design of GIS production of snow disaster monitoring and assessment system.

Li, X., Feng, X.Z., Lu, A.X., Sun, W.X., Wang, L.H., *Chinese Academy of Sciences. Lanzhou Institute of Glaciology and Geocryology. Memoirs,* 1995, No.8, p.98-100, In Chinese with English summary. 1 ref.

Snow surveys, Snow cover distribution, Computer programs, Data processing, China

50-3991

Studies on data policy of WDC-D for Glaciology (Snow and Ice) and Geocryology.

Chen, X.Z., Cheng, G.D., Zeng, Q.Z., Li, X., Lu, A.X., *Chinese Academy of Sciences. Lanzhou Institute of Glaciology and Geocryology. Memoirs,* 1995, No.8, p.101-105, In Chinese with English summary. 4 refs.

Data processing, Bibliographies, Research projects, Organizations, International cooperation

50-3992

Tentative plan of data policy items for WDC-D for Glaciology (Snow and Ice) and Geocryology.

Chen, X.Z., Cheng, G.D., Feng, X.Z., Li, X., Lu, A.X., *Chinese Academy of Sciences. Lanzhou Institute of Glaciology and Geocryology. Memoirs,* 1995, No.8, p.106-111, In Chinese with English summary. 1 ref.

Data processing, Bibliographies, Research projects, Organizations, International cooperation

50-3993

Study on the database system of accumulated snow.

Lu, A.X., Chen, X.Z., Wang, L.H., *Chinese Academy of Sciences. Lanzhou Institute of Glaciology and Geocryology. Memoirs,* 1995, No.8, p.112-115, In Chinese with English summary. 3 refs.

Snow surveys, Snow cover distribution, Snow accumulation, Data processing

50-3994

Establishment and application of DTM of the Qinghai-Xizang Plateau.

Li, X., Chen, X.Z., *Chinese Academy of Sciences. Lanzhou Institute of Glaciology and Geocryology. Memoirs,* 1995, No.8, p.116-121, In Chinese with English summary. 8 refs.

Snow surveys, Snow cover distribution, Snow depth, Topographic surveys, Terrain identification, Permafrost distribution, Spaceborne photography, Data processing, China—Qinghai-Xizang Plateau

50-3995

Studies on the method of image processing and analysis of lake ice and snow.

Li, W.J., Chen, X.Z., *Chinese Academy of Sciences. Lanzhou Institute of Glaciology and Geocryology. Memoirs,* 1995, No.8, p.122-128, In Chinese with English summary. 6 refs.

Lake ice, Ice surveys, Ice conditions, Snow ice interface, Snow cover distribution, Terrain identification, Spaceborne photography, Image processing, China—Qinghai Lake

50-3996

Optical processing of remote sensing image and its some applications.

Liu, J.H., *Chinese Academy of Sciences. Lanzhou Institute of Glaciology and Geocryology. Memoirs,* 1995, No.8, p.129-132, In Chinese with English summary. 2 refs.

Spaceborne photography, Image processing, Terrain identification, Regional planning, China—Gansu Province

50-3997

Model to calculate the influence of terrain obstruction towards solar radiation based on digital terrain model—with an example of the Tianshan Mountains.

Li, X., Chen, X.Z., *Chinese Academy of Sciences. Lanzhou Institute of Glaciology and Geocryology. Memoirs,* 1995, No.8, p.133-146, In Chinese with English summary and a computer program in English included as an appendix. 5 refs.

Topographic surveys, Topographic effects, Slope orientation, Solar radiation, Insolation, Radiation balance, Spaceborne photography, Image processing, Computer programs, China—Tian Shan

50-3998

Glaciers and lakes in the Tianshan Mountains as indicators of climatic change.

Hu, R.J., Yang, C.A., Ma, H., Jiang, F.Q., *Chinese journal of arid land research,* 1994, 7(4), p.303-313, 5 refs.

Climatology, Climatic changes, Mountain glaciers, Glacier oscillation, Glacier mass balance, Snow line, Precipitation (meteorology), Lakes, Water level, Correlation, China—Tian Shan

50-3999

Snow recognition and classification using ISO-MIX.

Li, L.X., Zheng, H., Ma, H., Qiu, J.Q., *Chinese journal of arid land research,* 1994, 7(4), p.315-321, 4 refs.

Snow depth, Snow surveys, Seasonal variations, River basins, Remote sensing, Radiometry, Snow optics, Radiance, Classifications, Correlation, Models

50-4000

Afforestation control of disastrous snow drifting on rugged terrains in Xinjiang.

Hu, R.J., Ma, H., Jiang, F.Q., *Chinese journal of arid land research,* 1994, 7(4), p.339-343.

Snowdrifts, Snow accumulation, Turbulent flow, Wind factors, Countermeasures, Forest lines, Forest canopy, Vegetation patterns, Topographic effects, China—Xinjiang

50-4001

Paleobotany and cladistics and cladistics in paleobotany: enlightenment and uncertainty.

Nixon, K.C., *Review of palaeobotany and palynology,* Feb. 1996, 90(3), p.361-373, 62 refs.

Pleistocene, Paleobotany, Paleoecology, Fossils, Vegetation patterns, Classifications, Correlation, Statistical analysis, Accuracy

50-4002

Near-infrared spectral geometric albedos of Charon and Pluto: constraints on Charon's surface composition.

Roush, T.L., Cruikshank, D.P., Pollack, J.B., Young, E.F., Bartholomew, M.J., *Icarus,* Jan. 1996, 119(1), p.214-218, 15 refs.

Extraterrestrial ice, Satellites (natural), Surface properties, Ground ice, Photometry, Ice detection, Albedo, Spectra

50-4003

Screw anchors economically control pipeline buoyancy in muskeg.

Robertson, R., Curle, R., *Oil & gas journal,* Apr. 25, 1995, 93(17), p.49-54, 7 refs.

Muskeg, Gas pipelines, Underground pipelines, Stabilization, Buoyancy, Anchors, Design, Cost analysis

50-4004

Current and historical relationships between the tissue nitrogen content of a snowbed bryophyte and nitrogenous air pollution.

Woolgrove, C.E., Woodin, S.J., *Environmental pollution,* 1996, 91(3), p.283-288, 29 refs.

Air pollution, Aerosols, Plant ecology, Mosses, Plant physiology, Plant tissues, Chemical analysis, Snow cover, Snow line, Snowmelt, Snow impurities, Sedimentation, Environmental impact, Environmental tests

50-4005

Change of the physicomechanical properties of fibrous polymer composites exposed to moisture and low temperatures.

Starzhenetskaia, T.A., Davydova, N.N., *Mechanics of composite materials,* Jan. 1996, 31(4), p.366-370, Translated from Mekhanika kompozitnikh materialov. 10 refs.

Composite materials, Polymers, Porous materials, Low temperature tests, Saturation, Absorption, Freeze thaw cycles, Mechanical properties, Temperature effects

50-4006

Inter-annual variability in marine coastal antarctic bacterioplankton.

Delille, D., Mallard, L., Rosiers, C., *Polar biology,* Jan. 1996, 16(1), p.19-25, Refs. p.24-25.

Marine biology, Plankton, Microbiology, Ecosystems, Bacteria, Biomass, Subglacial observations, Ice cover effect, Solar radiation, Seasonal variations, Sampling, Antarctica—Dumont d'Urville Station, Antarctica—Géologie Archipelago

The dynamics of antarctic coastal marine bacterioplankton has been studied over a 2-year period. Two field stations were sampled between one and three times a week in 1989 and 1991 in the Adélie Coast area. The survey included physicochemical (temperature and particulate organic matter) and bacteriological (total and heterotrophic counts, cell volume and frequency of dividing cells estimation) measurements. The results suggest that a strong interannual variability affects the total bacterial abundance, the mean cell volume, the percentage of free living cells and to a lesser extent, the cultivable saprophytic bacterial communities. The observed variability can be partly explained by a large deficit of solar irradiance during the second year of study that may have affected sea ice and seawater primary production. (Auth.)

50-4007

Nitrogen fixation in arctic vegetation and soils from Svalbard, Norway.

Solheim, B., Endal, A., Vigstad, H., *Polar biology,* Jan. 1996, 16(1), p.35-40, 34 refs.

Ecosystems, Arctic landscapes, Bacteria, Plant tissues, Roots, Nutrient cycle, Geochemical cycles, Soil microbiology, Soil tests, Sampling, Vegetation factors, Norway—Svalbard

50-4008

Phytoplankton biomass, P-I relationships and primary production in the Weddell Sea, Antarctica, during the austral autumn.

Dower, K.M., Lucas, M.I., Phillips, R., Dieckmann, G., Robinson, D.H., *Polar biology,* Jan. 1996, 16(1), p.41-52, Refs. p.51-52.

Marine biology, Plankton, Biomass, Ecosystems, Chlorophylls, Photosynthesis, Sampling, Radiation absorption, Ice formation, Ice cover effect, Hydrography, Seasonal variations, Antarctica—Weddell Sea

An investigation into the changing phytoplankton biomass and total water column production during autumn sea ice formation in the eastern Weddell Sea showed reduced biomass concentrations and extremely low daily primary production. Mean chlorophyll-*a* concentration for the entire study period was extremely low. Areas of low biomass were identified as those either associated with heavy grazing or with deep mixing and corresponding low light levels. In most cases phytoplankton in the <20 μm size classes dominated. The mean index of photoadaptation, I_k, was 32.2±4.0 μmol/m²/s and photoinhibition was found in all cases. Primary production was integrated to the critical depth (Z_{cr}) at each production station and ranged from 15.6 to 41.5 mgC/m²/d. It appears that, other than grazing intensity, the relationship between the critical depth and the mix-

ing depth (Z_{mix}) is an important factor as, ultimately, light availability due both to the late season and growing sea ice cover severely limits production during the austral autumn. (Auth. mod.)

50-4009

Growth temperature preferences of fungal strains from Victoria Land, Antarctica.

Zucconi, L., Pagano, S., Fenice, M., Selbmann, L., Tosi, S., Onofri, S., *Polar biology,* Jan. 1996, 16(1), p.53-61, 32 refs.

Soil microbiology, Ecology, Soil tests, Fungi, Growth, Thermal stresses, Temperature effects, Low temperature tests, Cold weather survival, Antarctica—Victoria Land

Thirty-five strains of microfungi, isolated from various sites in Victoria Land, were grown at eight temperatures ranging from 0 to 45°C. Only 1 strain (*Chaetomium* sp. from hot soil) was a thermotolerant mesophile; other strains were psychrophilic (2 strains) or psychrotrophic (32 strains). The tolerance of different species to thermal instability is discussed, based on the width of the growth rate curves. (Auth.)

50-4010

Fungal hyphal length in litter of *Dryas octopetala* in high-arctic polar semi-desert, Svalbard.

Robinson, C.H., Borisova, O.B., Callaghan, T.V., Lee, J.A., *Polar biology,* Jan. 1996, 16(1), p.71-74, 31 refs.

Ecosystems, Tundra soils, Soil microbiology, Fungi, Biomass, Nutrient cycle, Decomposition, Sampling, Norway—Svalbard

50-4011

Interactive algorithm for vehicle routeing for winter-gritting.

Li, L.Y.O., Eglese, R.W., *Operational Research Society. Journal,* Feb. 1996, 47(2), p.217-228, 21 refs.

Winter maintenance, Road maintenance, Road icing, Ice control, Sanding, Vehicles, Route surveys, Logistics, Computerized simulation

50-4012

Topographical influence on precipitation distribution in different ranges of western Himalayas.

Singh, P., Ramasastri, K.S., Kumar, N., *Nordic hydrology,* 1995, 26(4-5), p.259-284, 32 refs.

Precipitation (meteorology), Mountains, Snow surveys, Snow cover distribution, Snow water equivalent, Wind factors, Topographic effects, Altitude, Seasonal variations, India—Himalaya Mountains

50-4013

Reconstructed runoff from the high arctic basin Bayelva based on mass-balance measurements.

Hagen, J.O., Lefauconnier, B., *Nordic hydrology,* 1995, 26(4-5), p.285-296, 14 refs.

River basins, Surface drainage, Runoff, Water balance, Glacial hydrology, Glacier ablation, Snowmelt, Glacier mass balance, Correlation, Seasonal variations, Norway—Spitsbergen

50-4014

Release of major ions and hydrogen peroxide from homogeneous, melting snow.

Herrmann, R., Kranz, J., *Nordic hydrology,* 1995, 26(4-5), p.359-368, 32 refs.

Snow hydrology, Snow physics, Snow composition, Snowmelt, Meltwater, Ion diffusion, Ion density (concentration), Simulation, Chemical analysis, Solubility

50-4015

Satellite remote sensing applications for snow cover characterization in the morphogenetic regions of upper Tista river basin, Sikkim Himalaya.

Krishna, A.P., *International journal of remote sensing,* Mar. 10, 1996, 17(4), p.651-656, 6 refs.

Snow cover distribution, Snow surveys, River basins, Remote sensing, Spaceborne photography, Sensor mapping, Runoff forecasting, India—Sikkim

50-4016

Evaluation of SMMR satellite-derived snow depth using ground-based measurements.

Tait, A., Armstrong, R.L., *International journal of remote sensing,* Mar. 10, 1996, 17(4), p.657-665, 10 refs.

Snow surveys, Remote sensing, Snow depth, Snow optics, Spacecraft, Radiometry, Microwaves, Brightness, Meteorological data, Correlation, Accuracy, Data processing

50-4017

Operational use of ERS-1 SAR images in the Canadian ice monitoring programme.

Shokr, M.E., Ramsay, B., Falkingham, J.C., *International journal of remote sensing,* Mar. 10, 1996, 17(4), p.667-682, 17 refs.

Sea ice distribution, Ice surveys, Ice conditions, Classifications, Remote sensing, Sensor mapping, Spaceborne photography, Synthetic aperture radar, Image processing, Correlation, Accuracy, Canada—St. Lawrence, Gulf

50-4018

Fuzzy classification of earth terrain covers using complex polarimetric SAR data.

Du, L., Lee, J.S., *International journal of remote sensing,* Mar. 10, 1996, 17(4), p.809-826, 12 refs.

Sea ice distribution, Geophysical surveys, Ice surveys, Sensor mapping, Spaceborne photography, Synthetic aperture radar, Backscattering, Ice conditions, Classifications, Image processing, Statistical analysis

50-4019

Impact of freshwater on a subarctic coastal ecosystem under seasonal sea ice (southeastern Hudson Bay, Canada). I. Interannual variability and predicted global warming influence on river plume dynamics and sea ice.

Ingram, R.G., Wang, J., Lin, C., Legendre, L., Fortier, L., *Journal of marine systems,* Feb. 1996, 7(2-4), p.221-231, 33 refs.

Estuaries, Oceanography, Climatology, Global warming, Ocean currents, River flow, Runoff, Sea ice distribution, Ice cover thickness, Ice breakup, Ice melting, Seasonal variations, Ice models, Canada—Quebec—Hudson Bay

50-4020

Impact of freshwater on a subarctic coastal ecosystem under seasonal sea ice (southeastern Hudson Bay, Canada). II. Production and export of microalgae.

Legendre, L., et al, *Journal of marine systems,* Feb. 1996, 7(2-4), p.233-250, 57 refs.

Marine biology, Microbiology, Plankton, Biomass, Ecosystems, Ocean currents, Estuaries, Runoff, Sedimentation, Ice cover effect, Ice water interface, Ice bottom surface, Salinity, Canada—Quebec—Hudson Bay

50-4021

Impact of freshwater on a subarctic coastal ecosystem under seasonal sea ice (southeastern Hudson Bay, Canada). III. Feeding success of marine fish larvae.

Fortier, L., Gilbert, M., Ponton, D., Ingram, R.G., Robineau, B., Legendre, L., *Journal of marine systems,* Feb. 1996, 7(2-4), p.251-265, 48 refs.

Marine biology, Ecosystems, Estuaries, Biomass, Nutrient cycle, Ice cover effect, Ocean currents, Turbulent diffusion, Turbidity, Radiance, Salinity, Sampling, Climatic changes, Global warming, Canada—Quebec—Hudson Bay

50-4022

Climate-sensitivity of European marginal seas, derived from the interpretation of modelling studies.

Backhaus, J.O., *Journal of marine systems,* Feb. 1996, 7(2-4), p.361-382, 55 refs.

Oceanography, Climatology, Climatic changes, Ocean currents, Convection, Air ice water interaction, Sea ice distribution, Ice cover effect, Hydrography, Models, Arctic Ocean

50-4023

Structure and equation of state of long chain amphiphile monolayer adsorbed on ice Ih: a molecular dynamics study.

Bell, K.P., Rice, S.A., *Journal of chemical physics,* Jan. 22, 1996, 104(4), p.1684-1692, 19 refs.

Ice physics, Polymers, Monomolecular films, Adsorption, Ice air interface, Ice structure, Molecular structure, Orientation, Molecular energy levels, Thermodynamics, Simulation, Mathematical models

50-4024

On radio detection of ultrahigh energy neutrinos in antarctic ice.

Frichter, G.M., Ralston, J.P., McKay, D.W., *Physical review D,* Feb. 1, 1996, 53(3), p.1684-1698, 35 refs.

Ice physics, Gamma irradiation, Radio waves, Antennas, Detection, Ice sheets, Electromagnetic properties, Wave propagation

Antarctic ice meets the requirements for an efficient detection medium for a radio frequency neutrino telescope. This paper estimates the sensitivity of realistic antennas embedded deep in the ice to 100 MHz-1 GHz signals generated by predicted neutrino fluxes from active galactic nuclei. The conclusion is that a single radio receiver can probe an ≈ 1 km^3 volume for events with primary energy near 2 PeV and that the total number of events registered would be roughly 200 to 400/yr in the most conservative estimate. An array of such receivers would increase sensitivity dramatically. A radio neutrino telescope could directly observe and test our understanding of the most powerful particle accelerators in the universe, simultaneously testing the standard theory of particle physics at unprecedented energies. (Auth. mod.)

50-4025

Measurements of friction between snow and ski running surfaces. Part 2. [Lumen ja suksenpohjamuovien välisen kitkan mittauksia. Osa 2]

Palosuo, E., Keinonen, J., Suominen, H., Jokitalo, R., *University of Helsinki. Report series in geophysics,* 1979, No.13, 42p., In Finnish with English summary, table of contents, and list of captions. 11 refs.

Skis, Plastics snow friction, Wood snow friction, Lubricants, Sliding

50-4026

Transporting icebergs as a fresh water source.

Rensselaerville, NY, [1974], 38p., Unpublished summary for the participants of a seminar sponsored by the Institute on Man and Science, Rensselaerville, NY, Feb. 1-3, 1974. The Institute was subsequently renamed the Rensselaerville Institute.

Icebergs, Iceberg towing, Ice (water storage), Water supply

50-4027

Focus 2000: wind, ice, and fog.

Annual Mount Washington Observatory Symposium, 4th, North Conway, NH, June 23-24, 1995, North Conway, NH, Mount Washington Observatory, 1996, 99p., Refs. passim. For selected papers see 50-4028 through 50-4034.

Ice storms, Ice accretion, Ice forecasting, Ice detection, Weather observations, Weather stations, Meteorological instruments, Anemometers

50-4028

Design of an anemometer for extreme conditions.

Krynski, L., Schoof, J., Annual Mount Washington Observatory Symposium, 4th, North Conway, NH, June 23-24, 1995. Focus 2000: wind, ice, and fog, North Conway, NH, Mount Washington Observatory, 1996, p.3-8.

Anemometers, Ice accretion, Ice storms, Meteorological instruments, Cold weather tests

50-4029

Measuring wind speed in freezing rain.

Claffey, K.J., Ryerson, C.C., MP 3805, Annual Mount Washington Observatory Symposium, 4th, North Conway, NH, June 23-24, 1995. Focus 2000: wind, ice, and fog, North Conway, NH, Mount Washington Observatory, 1996, p.9-16, 3 refs.

Ice storms, Ice accretion, Wind velocity, Anemometers, Meteorological instruments, Weather stations, Cold weather tests

An important factor contributing to ice accretion on structures during freezing rain is wind speed. Currently, most National Weather Service anemometers are not heated; therefore, reported wind speed during glaze storms may be compromised by a change in the aerodynamics of the anemometer caused by accreted ice. The Cold Regions Research and Engineering Laboratory (CRREL) tests instruments to

determine their ability to make meteorological measurements in freezing rain. As part of these tests the authors deployed three anemometers: two heated and one unheated. The unheated instrument is a helicoid anemometer, a standard instrument used at many Army research sites, made by R.M. Young. The heated units, made by Hydro-Tech and Rosemount, use, respectively, a modified cup design and pressure transducers to sense wind speed. In this report the authors describe the operating characteristics of the three anemometers in non-icing and icing conditions. During the test period, Oct. 1993 through May 1994, only two minor freezing rain storms occurred. Both of the heated anemometers stayed ice free, and the unheated Young anemometer iced moderately. The wind speeds reported by the three anemometers during these storms are compared and related to the icing that occurred on the unheated Young anemometer. Even though the Young anemometer was covered with ice during freezing rain, its 15-minute average wind speed measurements compared well with those of the heated Rosemount anemometer.

50-4030

How to measure the wind accurately in icing conditions.

Kenyon, P.R., Blittersdorf, D.C., Annual Mount Washington Observatory Symposium, 4th, North Conway, NH, June 23-24, 1995. Focus 2000: wind, ice, and fog, North Conway, NH, Mount Washington Observatory, 1996, p.17-26, 11 refs.

Ice accretion, Ice storms, Supercooled clouds, Wind velocity, Anemometers, Meteorological instruments, Cold weather tests

50-4031

Icing rate meter estimation of transmission line icing.

McComber, P., Laflamme, J., Druez, J., Paradis, A., Annual Mount Washington Observatory Symposium, 4th, North Conway, NH, June 23-24, 1995. Focus 2000: wind, ice, and fog, North Conway, NH, Mount Washington Observatory, 1996, p.29-34, 5 refs.

Power line icing, Ice accretion, Icing rate, Ice detection, Ice loads, Ice forecasting, Ice storms, Meteorological instruments

50-4032

Rotating multicylinder.

Jones, K.F., Koh, G., MP 3806, Annual Mount Washington Observatory Symposium, 4th, North Conway, NH, June 23-24, 1995. Focus 2000: wind, ice, and fog, North Conway, NH, Mount Washington Observatory, 1996, p.35-43, 9 refs.

Ice accretion, Ice forecasting, Supercooled clouds, Cloud droplets, Unfrozen water content, Particle size distribution, Meteorological instruments

The rotating multicylinder method is used to measure the liquid water content and median volume diameter of droplets in subfreezing clouds. This method takes advantage of the variation in the collision efficiency of cloud droplets with cylinders of different diameters. The multicylinder method was originated by Irving Langmuir in the early 1940s at the Mt. Washington Observatory, and multicylinder measurements are still made at the Observatory. This method of determining the liquid water content and median volume droplet diameter is labor intensive and time consuming. Its use is limited to 1) air temperatures low enough that the cloud droplets freeze on impact, and 2) combinations of wind speed and droplet size that result in measurable ice accretion on at least two cylinders. On the other hand, the multicylinder is inexpensive, virtually unbreakable and immune to RF noise. Since 1992, the authors have made multicylinder measurements alongside other instruments designed to measure cloud parameters in the severe weather the summit of Mt. Washington experiences. These comparisons are presented and discussed.

50-4033

Efficacy of ice detector hoarfrost observations.

Ryerson, C.C., Claffey, K.J., MP 3807, Annual Mount Washington Observatory Symposium, 4th, North Conway, NH, June 23-24, 1995. Focus 2000: wind, ice, and fog, North Conway, NH, Mount Washington Observatory, 1996, p.45-55, 8 refs.

Hoarfrost, Ice accretion, Ice detection, Ice forecasting, Frost forecasting, Ice storms, Weather forecasting, Meteorological instruments

Nocturnal hoarfrost forms in calm, cloudless, subfreezing weather when surfaces radiatively cool to the frost point. Frost is sensitive to the orientation of surfaces to the sky, and to the thermal properties of those surfaces. A Rosemount ice detector, developed for the National Weather Service Automated Surface Observation System (ASOS) and commercial use, is designed to detect freezing rain but also responds to frost deposition. The purpose of this study is to examine the ability of the ice detector to predict frost formation on other surfaces. Frost accretion measurements are made at CRREL on aluminum and glass plates oriented to the zenith, and 45° and 90° to the zenith. They are weighed during frost events to determine the mass of ice deposted on each. There are significant differences between the time of initial frost formation on plates, depending upon orientation, and on the ice detector probe. Frost typically forms on plates of all orientations about 5-6 hours before the probe begins to frost. The reason is thought to be that the probe is exposed to the radiatively warmer horizon, it is warmed by circulating air and an internal diagnostic current, and it has a lower emissivity than the plates. It thus frosts later, and less intensely, than any other surface. The ice detector does not provide an "early warning" of frost accretion because it frosts after other objects, if at all. It represents frost formation on vertical objects, such as windows, more reliably than on horizontal surfaces, such as aircraft wings and bridge pavments. The ice detector responds only to those more severe frost events on surfaces that are generally of least interest.

50-4034

Evaluation of the proposed ASOS freezing rain sensor.

Ramsay, A.C., Annual Mount Washington Observatory Symposium, 4th, North Conway, NH, June 23-24, 1995. Focus 2000: wind, ice, and fog, North Conway, NH, Mount Washington Observatory, 1996, p.63-69, 3 refs.

Aircraft icing, Ice accretion, Ice storms, Ice detection, Ice forecasting, Weather forecasting, Computer applications

50-4035

Atmosphere-surface interactions over polar oceans and heterogeneous surfaces.

Vihma, T., *Finnish marine research*, 1995, No.264, p.3-41 + appends., Ph.D. thesis to be defended at the University of Helsinki. Refs. p.35-40. For papers included in the appendixes see 48-225 or 21F-49058, 49-2101 or 22J-51881, and 50-2110 or 22F-54128.

Air ice water interaction, Ice heat flux, Ice cover effect, Polynyas, Drift, Polar atmospheres, Marine atmospheres, Atmospheric circulation, Ocean currents, Atmospheric boundary layer, Turbulent exchange, Greenland Sea, Antarctica—Weddell Sea

Processes of interaction between the atmospheric boundary layer and the planetary surface were studied with special emphasis on polar ocean surfaces: the open ocean, leads, polynyas and sea ice. The local exchange of momentum, heat and moisture were studied experimentally in the Weddell Sea and in the Greenland Sea. Exchange processes over heterogeneous surfaces are addressed by modelling studies. Over a homogeneous surface, the local turbulent fluxes can be reasonably well estimated using an iterative flux-profile scheme based on the Monin-Obukhov similarity theory. In the Greenland Sea, the near-surface air temperature and the generally small turbulent fluxes over the open ocean were affected by the sea surface temperature fronts. Over the sea ice cover in the Weddell Sea, the turbulent sensible heat flux was generally downwards, and together with an upward oceanic heat flux through the ice it compensated the heat loss from the surface via long-wave radiation. The sensible heat flux was typically from -15 to -20 W/m^2 in winter and -5 W/m^2 in summer. Over leads and coastal polynyas in the Weddell Sea, an upward heat loss from the Weddell Sea was 20-30 W/m^2. Ice motion in the Weddell Sea was found to be driven by the wind and the ocean current. The wind dominated on time scales of days, while the current became important on longer time scales. (Auth. mod.)

50-4036

ICEYE: development of an aircraft ice accretion warning and monitoring system.

Slaba, J., Lucaci, I., Hoznour, M., English, G.W., Moynihan, T.W., *Transport Canada. Transportation Development Centre, Montreal. Publication,* Mar. 1995, TP 12436E, 50p. + appends., With French summary. 10 refs. + bibliography.

Aircraft icing, Ice accretion, Ice detection, Ice acoustics, Ultrasonic tests, Warning systems, Safety

50-4037

Service evaluation of light de-icing and snowplowing equipment.

Girardin, M., *Transport Canada. Transportation Development Centre, Montreal. Publication,* July 1995, TP 12503E, 49p. + append., With French summary. 7 refs.

Snow removal equipment, Motor vehicles, Salting, Sanding, Road maintenance

50-4038

Scattering from a metallic object embedded near the randomly rough surface of a lossy dielectric.

O'Neill, K., Lussky, R.F., Jr., Paulsen, K.D., MP 3808, *IEEE transactions on geoscience and remote sensing,* Mar. 1996, 34(2), p.367-376, 19 refs.

Subsurface investigations, Electromagnetic prospecting, Radar echoes, Image processing, Computerized simulation, Mathematical models

Two-dimensional electromagnetic scattering from a perfectly conducting target embedded near the randomly rough surface of an isotropic lossy dielectric is investigated. The randomly rough surface is illuminated by a finite width beam from an antenna in the free space above the surface, with off-normal incidence. Standard integral equation methods are applied and include all subsurface interactions between the object and rough surface. For a chosen embedded target, Monte Carlo simulations are performed for a selection of ensembles of rough surface types intended to be suggestive of natural ground. Far-field scattering coefficient distributions and corresponding synthetic images suggest when the buried object should be discernible. Sensitivities are explored in terms of surface type, polarization of the incident field, depth and orientation of target, soil characteristics, incidence angle, and beam width. Many of the scattering features identified should also apply in 3-D.

50-4039

Ice-cover influence on flow and bedload transport in dune-bed channels.

Smith, B.T., Ettema, R., *University of Iowa. Iowa Institute of Hydraulic Research. IIHR technical report,* June 1995, No.374, 160p., 46 refs. For Ph.D. thesis of same title see 50-2480.

River ice, Ice cover effect, Ice water interface, River flow, Channels (waterways), Suspended sediments, Alluvium, Bottom sediment, Sediment transport, Water erosion, Mathematical models

50-4040

Estimation of mean velocity for flow under ice cover.

Teal, M.J., Ettema, R., *University of Iowa. Iowa Institute of Hydraulic Research. IIHR technical report,* May 1995, No.373, 83p., 22 refs. For another version see 49-6732.

River ice, Ice cover effect, Ice water interface, River flow, Stream flow, Runoff forecasting, Mathematical models, Computer programs

50-4041

SCAR report No.10, Dec. 1994. Coastal and shelf ecology of the antarctic sea-ice zone. Science Plan and Implementation Plan, October 1994.

Scientific Committee on Antarctic Research, Cambridge, Scott Polar Research Institute, 1994, 20p.

Research projects, Marine biology, Ecology

This document describes the Science Plan for CS-EASIZ (Coastal and Shelf Ecology of the Antarctic Sea-Ice Zone). The aim of the CS-EASIZ Program is to improve the understanding of the structure and dynamics of the antarctic coastal and shelf ecosystem (ACSE). Particular attention will be paid to those features that make the biology of this ice-dominated ecosystem so distinctive, and to understanding seasonal, inter-annual and long-term changes. Six key scientific questions have been identified, and for each of these between two and seven research areas are recommended. The heart of the CS-EASIZ Program will be the Core Program, a series of basic measurements to be undertaken on the ice, water-column and benthic sub-systems of the ACSE. It is proposed that CS-EASIZ start in the 1994-95 season and run for 10 years. A dedicated cruise has been scheduled for the 1996-97 season, and a timetable of workshops and symposia is proposed. (Auth. mod.)

50-4042

IceNav shipboard radar integration.

Marton, C., *Transport Canada. Transportation Development Centre, Montreal. Publication,* Apr. 1995, TP 12495E, 26p. + appends., With French summary.

Ice navigation, Ice detection, Ice reporting, Radar tracking, Data transmission, Image processing, Computer programs

50-4043

Ice management in Lac St. Pierre.

Carter, D., Stander, E., Hodgson, M., *Transport Canada. Transportation Development Centre, Montreal. Publication,* Mar. 1995, TP 12439E, 52p. + appends., With French summary. Refs. p.49-52.

River ice, Lake ice, Ice navigation, Ice control, Ice booms, Ice solid interface, Ice loads, Canada—Quebec—St. Lawrence River

50-4044

Stability of sublittoral, fine-grained sediments in a subarctic estuary.

Amos, C.L., Sutherland, T.F., Zevenhuizen, J., *Sedimentology,* Feb. 1996, 43(1), p.1-19, 60 refs.

Estuaries, Marine geology, Sedimentation, Littoral zone, Ocean bottom, Bottom sediment, Physical properties, Erosion, Shear stress, Stability, Clay minerals, Sampling, Canada—Quebec—Hudson Bay

50-4045

Secondary precipitates in Pleistocene and present cryogenic environments (Mendoza Precordillera, Argentina, Transbaikalia, Siberia, and Seymour Island, Antarctica).

Vogt, T., Corte, A.E., *Sedimentology*, Feb. 1996, 43(1), p.53-64, Refs. p.62-64.

Geocryology, Pleistocene, Periglacial processes, Sediments, Active layer, Freezing front, Frozen ground mechanics, Diagenesis, Cryogenic structures, Rock properties, Mineralogy, Antarctica—Seymour Island

Secondary precipitates (iron oxide, calcite, etc.) are currently observed in cold-climate Pleistocene deposits. Some have micro- and ultrastructures quite different from precipitates of vadose, phreatic and biogenic origin, and seem to have originated by freezing processes. The microstructures of calcite coatings from a Pleistocene cryopediment in the Mendoza Pre-Cordillera, from a Lower Pleistocene cryogenic slope deposit in Western Transbaikalia and from the present active layer in Antarctica are described. They show similar patterns: fibrous crystals often consisting of piles of platelets, some with internal holes, assembled in millimeter-scale fringes on the lower face of clasts. Observational (mainly fabric) evidence confirms that such peculiar crystals are formed during freezing. The features are unknown in other climates and, when found in past sediments, can be diagnostic of cryogenic palaeoenvironments. (Auth. mod.)

50-4046

Study of frozen solutions of nucleic acid nitrogen bases by means of low temperature fast-atom bombardment mass spectrometry.

Boriak, O.A., Kosevich, M.V., Shelkovskiĭ, V.S., Blagoĭ, IU.P., *Rapid communications in mass spectrometry*, 1996, 10(2), p.197-199, 13 refs.

Cryobiology, Cryogenics, Solutions, Frozen liquids, Ice physics, Ice spectroscopy, Ice sublimation, Ion diffusion, Spectra

50-4047

Snow behaviour under compaction for the production of ice.

Gaméda, S., Vigneault, C., Raghavan, G.S.V., *Energy*, Jan. 1996, 21(1), p.15-20, 15 refs.

Snow mechanics, Snow compaction, Ice makers, Stresses, Compressive properties, Snow water content, Mechanical tests, Snow temperature, Temperature effects, Cold storage

50-4048

Hydraulic conductivity of frozen granular soils.

Andersland, O.B., Wiggert, D.C., Davies, S.H., *Journal of environmental engineering*, Mar. 1996, 122(3), p.212-216, 9 refs.

Frozen ground mechanics, Linings, Subsurface structures, Permeability, Ice erosion, Soil water migration, Leaching, Waste treatment, Land reclamation, Simulation, Environmental tests, Engineering geology

50-4049

Ecology and decline of red spruce in the eastern United States.

Eagar, C., ed, Adams, M.B., ed, Ecological studies, Vol.96, New York, Springer-Verlag, 1992, 417p., Refs. passim. For individual papers see 50-4050 through 50-4059.

DLC SB608.R33E36 1992

Forest ecosystems, Plant ecology, Vegetation patterns, Trees (plants), Air pollution, Environmental impact, Plant physiology, Plant tissues, Cold tolerance, Growth, Acclimatization, Nutrient cycle

50-4050

Spruce-fir forests of eastern North America.

White, P.S., Cogbill, C.V., Ecology and decline of red spruce in the eastern United States. Ecological studies, Vol.96. Edited by C. Eagar and M.B. Adams, New York, Springer-Verlag, 1992, p.3-39, Refs. p.34-39.

DLC SB608.R33E36 1992

Forest ecosystems, Plant ecology, Vegetation patterns, Acclimatization, Trees (plants), Biogeography, Climatic factors

50-4051

Characterization of eastern U.S. spruce-fir soils.

Fernandez, I.J., Ecology and decline of red spruce in the eastern United States. Ecological studies, Vol.96. Edited by C. Eagar and M.B. Adams, New York, Springer-Verlag, 1992, p.40-63, Refs. p.59-63.

DLC SB608.R33E36 1992

Forest ecosystems, Forest soils, Mountain soils, Soil formation, Soil classification, Soil composition, Soil chemistry, Nutrient cycle, Plant ecology, Vegetation patterns

50-4052

Atmospheric deposition and pollutant exposure of eastern U.S. forests.

Mohnen, V.A., Ecology and decline of red spruce in the eastern United States. Ecological studies, Vol.96. Edited by C. Eagar and M.B. Adams, New York, Springer-Verlag, 1992, p.64-124, Refs. p.120-124.

DLC SB608.R33E36 1992

Forest ecosystems, Air pollution, Environmental impact, Physiological effects, Plant physiology, Plant ecology, Atmospheric composition, Ozone, Precipitation (meteorology), Cloud cover, Cloud droplets

50-4053

Condition and recent trends in high-elevation red spruce populations.

Peart, D.R., Nicholas, N.S., Zedaker, S.M., Miller-Weeks, M.M., Siccama, T.G., Ecology and decline of red spruce in the eastern United States. Ecological studies, Vol.96. Edited by C. Eagar and M.B. Adams, New York, Springer-Verlag, 1992, p.125-191, Refs. p.182-191.

DLC SB608.R33E36 1992

Forest ecosystems, Plant ecology, Vegetation patterns, Revegetation, Trees (plants), Growth, Biomass, Biogeography

50-4054

Dendroecology of red spruce decline.

Cook, E.R., Zedaker, S.M., Ecology and decline of red spruce in the eastern United States. Ecological studies, Vol.96. Edited by C. Eagar and M.B. Adams, New York, Springer-Verlag, 1992, p.192-231, Refs. p.228-231.

DLC SB608.R33E36 1992

Forest ecosystems, Plant ecology, Vegetation patterns, Trees (plants), Phenology, Growth, Paleobotany

50-4055

Soil-mediated effects of atmospheric deposition on eastern U.S. spruce-fir forests.

Johnson, D.W., Fernandez, I.J., Ecology and decline of red spruce in the eastern United States. Ecological studies, Vol.96. Edited by C. Eagar and M.B. Adams, New York, Springer-Verlag, 1992, p.235-270, Refs. p.265-270.

DLC SB608.R33E36 1992

Forest ecosystems, Plant ecology, Vegetation patterns, Air pollution, Atmospheric composition, Environmental impact, Physiological effects, Plant physiology, Soil air interface, Forest soils, Mountain soils, Soil chemistry, Nutrient cycle

50-4056

Atmospheric deposition effects on foliar injury and foliar leaching in red spruce.

Schier, G.A., Jensen, K.F., Ecology and decline of red spruce in the eastern United States. Ecological studies, Vol.96. Edited by C. Eagar and M.B. Adams, New York, Springer-Verlag, 1992, p.271-294, Refs. p.289-294.

DLC SB608.R33E36 1992

Forest ecosystems, Plant ecology, Vegetation patterns, Trees (plants), Air pollution, Environmental impact, Physiological effects, Plant physiology, Plant tissues

50-4057

Winter injury and developmental cold tolerance of red spruce.

DeHayes, D.H., Ecology and decline of red spruce in the eastern United States. Ecological studies, Vol.96. Edited by C. Eagar and M.B. Adams, New York, Springer-Verlag, 1992, p.295-337, Refs. p.332-337.

DLC SB608.R33E36 1992

Trees (plants), Plant ecology, Plant physiology, Plant tissues, Frost resistance, Cold tolerance, Acclimatization, Cryobiology

50-4058

Effects of atmospheric deposition and ozone on carbon allocation and associated physiological processes in red spruce.

McLaughlin, S.B., Kohut, R.J., Ecology and decline of red spruce in the eastern United States. Ecological studies, Vol.96. Edited by C. Eagar and M.B. Adams, New York, Springer-Verlag, 1992, p.338-382, Refs. p.377-382.

DLC SB608.R33E36 1992

Forest ecosystems, Plant ecology, Vegetation patterns, Trees (plants), Air pollution, Ozone, Environmental impact, Physiological effects, Plant physiology, Plant tissues, Growth, Nutrient cycle

50-4059

Synthesis and conclusions from epidemiological and mechanistic studies of red spruce decline.

Johnson, A.H., et al, Ecology and decline of red spruce in the eastern United States. Ecological studies, Vol.96. Edited by C. Eagar and M.B. Adams, New York, Springer-Verlag, 1992, p.385-411, 21 refs.

DLC SB608.R33E36 1992

Forest ecosystems, Plant ecology, Vegetation patterns, Trees (plants), Air pollution, Environmental impact, Physiological effects, Plant physiology, Plant tissues, Growth, Acclimatization, Cold tolerance

50-4060

High-latitude rainforests and associated ecosystems of the west coast of the Americas: climate, hydrology, ecology, and conservation.

Lawford, R.G., ed, Alaback, P.B., ed, Fuentes, E., ed, Ecological studies, Vol.116, New York, Springer-Verlag, 1996, 409p., Refs. passim. For selected papers see 50-4061 through 50-4071.

DLC QH101.H55 1996

Forest ecosystems, Forestry, Plant ecology, Vegetation patterns, Revegetation, Global warming, Regional planning

50-4061

Past changes in climate and tree growth in the western Americas.

D'Arrigo, R.D., Jacoby, G.C., High-latitude rainforests and associated ecosystems of the west coast of the Americas. Ecological studies, Vol.116. Edited by R.G. Lawford, P.B. Alaback, and E. Fuentes, New York, Springer-Verlag, 1996, p.75-88, Refs. p.85-88.

DLC QH101.H55 1996

Plant ecology, Paleobotany, Paleoclimatology, Forest lines, Forest ecosystems, Global warming

50-4062

Constraints on terrestrial primary productivity in temperate forests along the Pacific coast of North and South America.

Waring, R.H., Winner, W.E., High-latitude rainforests and associated ecosystems of the west coast of the Americas. Ecological studies, Vol.116. Edited by R.G. Lawford, P.B. Alaback, and E. Fuentes, New York, Springer-Verlag, 1996, p.89-102, Refs. p.100-102.

DLC QH101.H55 1996

Plant ecology, Plant physiology, Photosynthesis, Biomass, Forest ecosystems, Climatic factors, Light effects

50-4063

Biodiversity patterns in relation to climate: the coastal temperate rainforests of North America.

Alaback, P.B., High-latitude rainforests and associated ecosystems of the west coast of the Americas. Ecological studies, Vol.116. Edited by R.G. Lawford, P.B. Alaback, and E. Fuentes, New York, Springer-Verlag, 1996, p.105-133, Refs. p.127-133.
DLC QH101.H55 1996

Plant ecology, Vegetation patterns, Forest ecosystems, Paleobotany, Palynology, Climatic factors, Acclimatization

50-4064

Phytogeographic relationships and regional richness patterns of the cool temperate rainforest flora of southern South America.

Arroyo, M.T.K., Riveros, M., Peñaloza, A., Cavieres, L., Faggi, A.M., High-latitude rainforests and associated ecosystems of the west coast of the Americas. Ecological studies, Vol.116. Edited by R.G. Lawford, P.B. Alaback, and E. Fuentes, New York, Springer-Verlag, 1996, p.134-172, Refs. p.168-172.
DLC QH101.H55 1996

Plant ecology, Vegetation patterns, Forest ecosystems, Paleobotany, Paleoclimatology, Biogeography, Chile

50-4065

Comparative review of forest dynamics and disturbance in the temperate rainforests of North and South America.

Veblen, T.T., Alaback, P.B., High-latitude rainforests and associated ecosystems of the west coast of the Americas. Ecological studies, Vol.116. Edited by R.G. Lawford, P.B. Alaback, and E. Fuentes, New York, Springer-Verlag, 1996, p.173-213, Refs. p.205-213.
DLC QH101.H55 1996

Plant ecology, Vegetation patterns, Forest ecosystems, Revegetation, Accidents, Avalanches, Climatic factors, Human factors, Environmental impact

50-4066

Temperate rainforest lakes of Chile and Canada: comparative ecology and sensitivity to anthropocentric change.

Soto, D., Stockner, J.G., High-latitude rainforests and associated ecosystems of the west coast of the Americas. Ecological studies, Vol.116. Edited by R.G. Lawford, P.B. Alaback, and E. Fuentes, New York, Springer-Verlag, 1996, p.266-280, Refs. p.278-280.
DLC QH101.H55 1996

Lakes, Limnology, Ecosystems, Ecology, Hydrogeochemistry, Nutrient cycle, Human factors, Global warming, Canada—British Columbia, Chile

50-4067

Implications of patch dynamics for forested ecosystems in the Pacific Northwest.

Bradshaw, G.A., Swanson, F.J., Fiorella, M.R., High-latitude rainforests and associated ecosystems of the west coast of the Americas. Ecological studies, Vol.116. Edited by R.G. Lawford, P.B. Alaback, and E. Fuentes, New York, Springer-Verlag, 1996, p.283-305, Refs. p.303-305.
DLC QH101.H55 1996

Forest ecosystems, Forestry, Plant ecology, Vegetation patterns, Revegetation, Regional planning, Human factors, Spaceborne photography, Environment simulation

50-4068

Assessing and responding to the effects of climate change on forest ecosystems.

Spittlehouse, D.L., High-latitude rainforests and associated ecosystems of the west coast of the Americas. Ecological studies, Vol.116. Edited by R.G. Lawford, P.B. Alaback, and E. Fuentes, New York, Springer-Verlag, 1996, p.306-319, Refs. p.317-319.
DLC QH101.H55 1996

Forest ecosystems, Forestry, Plant ecology, Vegetation patterns, Revegetation, Regional planning, Global warming

50-4069

Comparison of the ecology and conservation management of cool temperate rainforest in Tasmania and the Americas.

Brown, M.J., Read, J., High-latitude rainforests and associated ecosystems of the west coast of the Americas. Ecological studies, Vol.116. Edited by R.G. Lawford, P.B. Alaback, and E. Fuentes, New York, Springer-Verlag, 1996, p.320-341, Refs. p.336-341.
DLC QH101.H55 1996

Forest ecosystems, Forestry, Plant ecology, Vegetation patterns, Revegetation, Forest fires, Regional planning, Global warming, Australia—Tasmania

50-4070

Logging effects on the aquatic ecosystem: a case study in the Carnation Creek Experimental Watershed on Canada's west coast.

Hetherington, E.D., High-latitude rainforests and associated ecosystems of the west coast of the Americas. Ecological studies, Vol.116. Edited by R.G. Lawford, P.B. Alaback, and E. Fuentes, New York, Springer-Verlag, 1996, p.342-352, 21 refs.
DLC QH101.H55 1996

Streams, Watersheds, Ecosystems, Ecology, Forestry, Environmental impact, Regional planning, Canada—British Columbia—Vancouver Island

50-4071

Biodiversity of Canadian forests, with particular reference to the west coast forests.

Boyle, T.J.B., High-latitude rainforests and associated ecosystems of the west coast of the Americas. Ecological studies, Vol.116. Edited by R.G. Lawford, P.B. Alaback, and E. Fuentes, New York, Springer-Verlag, 1996, p.353-378, Refs. p.373-378.
DLC QH101.H55 1996

Forest ecosystems, Forestry, Plant ecology, Vegetation patterns, Environmental protection, Regional planning, Canada—British Columbia

50-4072

Dynamics of montane treelines.

Slatyer, R.O., Noble, I.R., Landscape boundaries: consequences for biotic diversity and ecological flows. Ecological studies, Vol.92. Edited by A.J. Hansen and F. Di Castri, New York, Springer-Verlag, 1992, p.346-359, 34 refs.
DLC QH541.15.E27L36 1992

Forest lines, Forest tundra, Plant ecology, Plant physiology, Vegetation patterns, Acclimatization

50-4073

Sharp and gradual mountain timberlines as a result of species interaction.

Armand, A.D., Landscape boundaries: consequences for biotic diversity and ecological flows. Ecological studies, Vol.92. Edited by A.J. Hansen and F. Di Castri, New York, Springer-Verlag, 1992, p.360-378, 23 refs.
DLC QH541.15.E27L36 1992

Forest lines, Forest ecosystems, Forest tundra, Steppes, Plant ecology, Vegetation patterns, Acclimatization

50-4074

Record of Holocene paleoclimate change along the Antarctic Peninsula: evidence from glacial marine sediments, Lallemand Fjord.

Shevenell, A.E., Clinton, N.Y., Hamilton College, Apr. 1996, 46p. + tables, Contribution to research experience for undergraduates: Office of Polar Programs, National Science Foundation (Earth sciences). Refs. p.42-45.

Marine geology, Sea ice distribution, Glacial geology, Sedimentation, Paleoclimatology, Ice shelves, Variations, Antarctica—Lallemand Fjord

Sedimentologic and geochemical analyses of a 5.5 m long, high resolution sediment gravity core were collected in Lallemand Fjord. Three distinct sedimentologic units believed to reflect distinct paleoenvironments in the fjord were recognized. Deglaciation of Lallemand Fjord is believed to have occurred prior to ^{14}C 8,000 year BP, followed by a period of open marine conditions with variable sea ice extent (variable T.O.C. content) between 8,000 and 2,700 ^{14}C years BP. Around 2,700 ^{14}C years BP, a shift to ice proximal sedimentation reflects the formation of more extensive and seasonally persistent sea ice. The Müller Ice Shelf, now present in the fjord, advanced approximately 400-500 years ago coincident with the Little Ice Age (LIA) (Domack et al., 1995). Results indicate environmental variability throughout the Holocene. Timing of the transitions correlates with Northern Hemisphere "T-Events" and ice core data from Greenland (GISP2), indicating the possibility of coherent climate variability in the Holocene, at least for the high latitudes. (Auth. mod.)

50-4075

Thunderstorm electrification.

Saunders, C.P.R., Handbook of atmospheric electrodynamics, Vol.1. Edited by H. Volland, Boca Raton, CRC Press, 1995, p.61-92, Refs. p.87-92.
DLC QC961.H337

Cloud physics, Atmospheric electricity, Precipitation (meteorology), Cloud electrification, Thunderstorms, Electric fields, Snow pellets, Ice crystal collision, Charge transfer

50-4076

Episodic acidification during snowmelt of high elevation lakes in the Sierra Nevada Mountains of California.

Stoddard, J.L., *Water, air, and soil pollution,* Dec. 1995, 85(2), International Conference on Acidic Deposition: Science & Policy, 5th, Göteborg, Sweden, June 26-30, 1995. Proceedings, vol.2. Acid reign '95?, p.353-358, 11 refs.

Limnology, Watersheds, Snow hydrology, Runoff, Water pollution, Aerosols, Snowmelt, Snow impurities, Ion diffusion, Chemical properties, Seasonal variations, Sampling, Environmental tests, United States—California—Sierra Nevada

50-4077

Seasonal, annual and long-term variability in the water chemistry of a remote high mountain lake: acid rain versus natural changes.

Wögrath, S., Psenner, R., *Water, air, and soil pollution,* Dec. 1995, 85(2), International Conference on Acidic Deposition: Science & Policy, 5th, Göteborg, Sweden, June 26-30, 1995. Proceedings, vol.2. Acid reign '95?, p.359-364, 11 refs.

Limnology, Hydrogeochemistry, Water chemistry, Water pollution, Aerosols, Chemical properties, Icebound lakes, Snowmelt, Weathering, Sampling, Ice cover effect, Snow cover effect

50-4078

Decline of fauna in small streams in the Swedish mountain range.

Olofsson, E., Melin, E., Degerman, E., *Water, air, and soil pollution,* Dec. 1995, 85(2), International Conference on Acidic Deposition: Science & Policy, 5th, Göteborg, Sweden, June 26-30, 1995. Proceedings, vol.2. Acid reign '95?, p.419-424, 14 refs.

Limnology, Precipitation (meteorology), Air pollution, Streams, Water chemistry, Water pollution, Ecosystems, Biomass, Snowmelt, Snow impurities, Sampling, Environmental impact, Sweden—Scandes Mountains

50-4079

130 years deposition record of sulfate, nitrate and chloride from a high-alpine glacier.

Döscher, A., Gäggeler, H.W., Schotterer, U., Schwikowski, M., *Water, air, and soil pollution,* Dec. 1995, 85(2), International Conference on Acidic Deposition: Science & Policy, 5th, Göteborg, Sweden, June 26-30, 1995. Proceedings, vol.2. Acid reign '95?, p.603-609, 17 refs.

Air pollution, Climatology, Atmospheric boundary layer, Aerosols, Alpine glaciation, Glacier ice, Sedimentation, Ice cores, Sampling, Ion density (concentration), Impurities, Correlation, Periodic variations, Switzerland—Grenzgletscher

50-4080

Changes in trace element speciation in Kola north surface waters during snow melt.

Rodushkin, I.V., Moiseenko, T.I., Kudriavtseva, L.P., *Water, air, and soil pollution,* Dec. 1995, 85(2), International Conference on Acidic Deposition: Science & Policy, 5th, Göteborg, Sweden, June 26-30, 1995. Proceedings, vol.2. Acid reign '95?, p.731-736, 8 refs.

Air pollution, Water pollution, Climatology, Aerosols, Metals, Sedimentation, Stream flow, Water chemistry, Snow impurities, Snowmelt, Sampling, Chemical analysis, Ion exchange, Environmental impact, Russia—Kola Peninsula

50-4081
Ecogeochemical investigations, Kola Peninsula: sulphur and trace element content in snow.
Äyräs, M., de Caritat, P., Chekushin, V.A., Niskavaara, H., Reimann, C., *Water, air, and soil pollution,* Dec. 1995, 85(2), International Conference on Acidic Deposition: Science & Policy, 5th, Göteborg, Sweden, June 26-30, 1995. Proceedings, vol.2. Acid reign '95?, p.749-754, 8 refs.
Air pollution, Climatology, Aerosols, Sedimentation, Snow impurities, Metals, Meltwater, Sampling, Chemical properties, Environmental impact, Russia—Kola Peninsula

50-4082
Speciation analysis of organolead compounds in Greenland snow at the femogram-per-gram level by capillary gas chromatography/atomic emission spectrometry.
Łobiński, R., Boutron, C.F., Candelone, J.P., Hong, S.M., Szpunar-Łobińska, J., Adams, F.C., *Analytical chemistry,* Sep. 15, 1995, 65(18), p.2510-2518, 30 refs.
Climatology, Air pollution, Aerosols, Organic nuclei, Ice sheets, Snow composition, Snow impurities, Meltwater, Microelement content, Microanalysis, Spectroscopy, Laboratory techniques

50-4083
Meteorological data of the Neumayer Station (Antarctica) for 1992, 1993, and 1994.
König-Langlo, G., Herber, A., *Berichte zur Polarforschung,* 1996, No.187, 101p., 22 refs.
Meteorological data, Meteorological instruments, Weather observations, Solar radiation, Antarctica—Ekström Ice Shelf, Antarctica—Georg von Neumayer Station
The new location of Neumayer Station, about 8km SE of Georg-von-Neumayer Station, is the site of the meteorological observatory on Ekström Ice Shelf, whence came the data included in this report. Synoptic surface observations are made at three-hourly intervals beginning at midnight UTC. Upper air soundings, from 100m to about 37,000m, are made once daily at about 10:00 UTC and include measurements of air pressure, temperature, humidity, and wind speed and direction. Monthly means are derived from both sources and are presented in tabular and other forms. Solar radiation and ozone measurements are made by five pyranometers, one pyrheliometer, one TUVR, two pyrgeometers and one photoelectric light detector.

50-4084
Experimental study of dielectric relaxation in supercooled alcohols and polyols.
Murthy, S.S.N., *Molecular physics,* Feb. 20, 1995, 87(3), p.691-709, 43 refs.
Liquid cooling, Supercooling, Solutions, Hydrocarbons, Hydrogen bonds, Molecular structure, Dielectric properties, Phase transformations, Temperature measurement

50-4085
Perspectives of plant cold tolerance: physiology and molecular responses.
Kaye, C., Guy, C.L., *Science progress,* 1995, 78(pt.4), p.271-299, 174 refs.
Plant physiology, Phenology, Cryobiology, Cold weather survival, Cold tolerance, Frost resistance, Plant tissues, Ice crystal growth, Thermal stresses, Acclimatization

50-4086
Ecology and physiology of psychrophilic bacteria from antarctic saline lakes and sea-ice.
Nichols, D.S., Nichols, P.D., McMeekin, T.A., *Science progress,* 1995, 78(pt.4), p.311-347, Refs. p. 340-347.
Marine biology, Limnology, Sea ice, Lake ice, Meltwater, Biomass, Ecosystems, Bacteria, Microbiology, Cold weather survival
The evolution of psychrophilic prokaryotes, those bacteria that require low temperature for survival and growth, has paralleled the formation of 'permanently' cold environments on earth. The sea-ice that annually forms and melts around the antarctic continent, and the marine-derived saline lakes of the Vestfold Hills in East Antarctica, are examples of two unique habitats for psychrophilic organisms. In both environments, microbial growth is governed by the twin constraints of temperature and the availability of free water (water activity). In sea-ice, psychrophilic bacteria dominate the culturable microbial community. In the diversity of saline lake systems, their dominance, and very survival, depend on the individual characteristics of each lake. This review discusses the formation of these uniquely harsh environments, considers the ultimate physico-chemical factors controlling the lower temperature limits of prokaryotic life, and reviews the basis of one of the major physiological adaptations necessary for psychrophilic growth, the lipids of the cell membrane. (Auth.)

50-4087
Insects and freezing.
Block, W., *Science progress,* 1995, 78(pt.4), p.349-372, 57 refs.
Cryobiology, Biomass, Frost resistance, Cold tolerance, Cold weather survival, Ice formation, Heterogeneous nucleation
Some insects freeze, others do not; some insects die when frozen, others do not. For cold-hardy species, there are two main options, freeze avoidance and freeze tolerance. The former involves the ability to supercool by elimination or masking of potential ice nucleators, polyols to depress the freezing point of the body fluids and other physiological mechanisms to avoid ice nucleation and the formation of lethal ice. Freeze tolerance employs proteinaceous ice nucleators to promote extracellular freezing, polyols for cryoprotection and the survival of partial ice formation. Freeze avoidance is common in insects whilst freeze tolerance occurs less frequently. The role of water in the low temperature physiology of insects is paramount and a greater understanding of its activity in insects (and other biological systems) is required before full understanding of the physiological and biochemical mechanisms underlying insect cold tolerance can be achieved. Research in insect cryobiology has application in the control of insect pests, in the use of ice nucleating microorganisms for biological control and in the development of techniques for the low temperature preservation of a range of biological materials, tissues and cells. (Auth. mod.)

50-4088
Techniques for determining pressure in the hydrothermal diamond-anvil cell: behavior and identification of ice polymorphs (I, III, V, VI).
Haselton, H.T., Jr., Chou, I.M., Shen, A.H., Bassett, W.A., *American mineralogist,* Nov.-Dec. 1995, 80(11-12), p.1302-1306, 17 refs.
Ice physics, High pressure ice, Liquid phases, High pressure tests, Classifications, Phase transformations, Melting points, Ice density

50-4089
Comparison of the Vostok ice deuterium record and series from southern ocean core MD 88-770 over the last two glacial-interglacial cycles.
Waelbroeck, C., et al, *Climate dynamics,* Dec. 1995, 12(2), p.113-123, 46 refs.
Paleoclimatology, Climatic changes, Insolation, Ice sheets, Ice cores, Bottom sediment, Sampling, Isotope analysis, Geochronology, Correlation, Antarctica—Vostok Station
Taking advantage of the fact that the Vostok deuterium (δD) record now covers almost two entire climatic cycles, the authors applied the orbital tuning approach to derive an age-depth relation for the Vostok ice core, which is consistent with marine time scale. A second age-depth relation for Vostok was obtained by correlating the ice isotope content with estimates of sea surface temperature from southern ocean core MD 88-770. Both methods lead to a close correspondence between Vostok and MD 88-770 time series. However, the coherence between the correlated δD and insolation is much lower than between the orbitally tuned δD and insolation. This reflects the lower accuracy of the correlation method with respect to direct orbital tuning. The authors compared the ice and marine records set in a common temporal framework, in the time and frequency domains. Results indicate that changes in the antarctic air temperature clearly lead variations in global ice volume in the obliquity and precession frequency bands. The relatively large lag found between Vostok δD variations and obliquity-driven changes in insolation suggests that variations in the local radiative balance are not the only mechanism responsible for the variability in surface temperature at those frequencies. (Auth. mod.)

50-4090
Climate simulations with the global coupled atmosphere-ocean model ECHAM2/OPYC. Part I: present-day climate and ENSO events.
Lunkeit, F., Sausen, R., Oberhuber, J.M., *Climate dynamics,* Feb. 1996, 12(3), p.195-212, 56 refs.
Climatology, Climatic changes, Air ice water interaction, Atmospheric circulation, Heat flux, Sea ice, Surface temperature, Ice cover thickness, Ice cover effect, Thermodynamics, Mathematical models

50-4091
ERS-1 synthetic aperture radar repeat-pass interferometry studies: implications for RADARSAT.
Vachon, P.W., Geudtner, D., Gray, A.L., Touzi, R., *Canadian journal of remote sensing,* Dec. 1995, 21(4), p.441-454, With French summary. 40 refs.
Remote sensing, Geophysical surveys, Spaceborne photography, Synthetic aperture radar, Wave propagation, Polarization (waves), Image processing, Resolution, Snow cover effect, Icebound lakes, Tundra terrain

50-4092
Mitochondrial DNA diversity in an apomictic *Daphnia* complex from the Canadian high Arctic.
Van Raay, T.J., Crease, T.J., *Molecular ecology,* Apr. 1995, 4(2), p.149-161, 53 refs.
Ecology, Biogeography, Arctic landscapes, Ponds, Limnology, Plankton, Sampling, Molecular structure, Classifications, Statistical analysis, Canada—Northwest Territories—Igloolik Island

50-4093
Molecular diversity and derivations of populations of *Silene acaulis* and *Saxifraga oppositifolia* from the high Arctic and more southerly latitudes.
Abbott, R.J., Chapman, H.M., Crawford, R.M.M., Forbes, D.G., *Molecular ecology,* Apr. 1995, 4(2), p.199-207, 41 refs.
Plant ecology, Arctic landscapes, Plants (botany), Classifications, Plant tissues, Molecular structure, Biogeography, Sampling, Chemical analysis, Norway—Spitsbergen

50-4094
Space data from scientific projects.
Harries, J.E., European Association for the International Space Year (EURISY) Symposium on the Earth's Environment—an Assessment from Space, Venice, Italy, Apr. 10-11, 1991. Proceedings and European Space Agency. Special publication No.337, Noordwijk, 1991, p.67-77.
DLC QC981.8.C5 E94
Geophysical surveys, Global change, Remote sensing, Spacecraft, Spaceborne photography, Radiometry, Radar echoes, Ice surveys
The paper provides a brief review of the use of Earth observation from space for scientific studies of the global environment. Examples are given of observations of the atmosphere, oceans, and other components of the climate system, including the antarctic ozone hole, which illustrate the power of global data sets that are uniquely available from space. Some lessons for future research are discussed. (Auth.)

50-4095
Classification of hailstorm systems in north China and the characteristics of hailstorm cells.
Yang, P.C., Guo, Y.F., Liu, J.L., Ma, Z.H., Academica Sinica. Institute of Atmospheric Physics. Annual report, 1982, Vol.1, Beijing, Science Press, 1983, p.78-82.
DLC QC851.C447a
Precipitation (meteorology), Turbulent boundary layer, Air masses, Weather forecasting, Hail clouds, Ice storms, Radar echoes, Classifications

50-4096
Finger-shaped echoes of hailstorm and the possible mechanism of their formation.
Ma, Z.H., Liu, J.L., Ma, J.L., Academica Sinica. Institute of Atmospheric Physics. Annual report, 1982, Vol.1, Beijing, Science Press, 1983, p.86-90.
DLC QC851.C447a
Precipitation (meteorology), Fronts (meteorology), Storms, Hail, Detection, Cloud physics, Radar echoes

50-4097
Some research on the development of hail cloud.
Wang, A.S., Xu, N.Z., Huang, M.Y., Xu, H.Y., Academica Sinica. Institute of Atmospheric Physics. Annual report, 1982, Vol.1, Beijing, Science Press, 1983, p.110-114, 3 refs.
DLC QC851.C447a
Precipitation (meteorology), Cloud physics, Hail, Classifications, Radar echoes

50-4098

Some characteristics of hail cloud formation processes in Xiyang area.

Wang, A.S., Chao, X.N., Kang, Y.S., Hong, Y.C., Xu, N.Z., Academica Sinica. Institute of Atmospheric Physics. Annual report, 1982, Vol.1, Beijing, Science Press, 1983, p.115-117, 3 refs.

DLC QC851.C447a

Precipitation (meteorology), Fronts (meteorology), Cloud physics, Cloud dissipation, Hail, Classifications, Radar echoes, China—Xiyang

50-4099

Apparent relationship between winter and spring snow and sea ice cover over the northern hemisphere and cold summer in northeast China.

Fu, C.B., Academica Sinica. Institute of Atmospheric Physics. Annual report, 1982, Vol.1, Beijing, Science Press, 1983, p.316-318, 3 refs.

DLC QC851.C447a

Climatology, Snow cover effect, Sea ice distribution, Ice cover effect, Atmospheric circulation, Air temperature, Cooling, Periodic variations, China

50-4100

Electro-impulse deicing of the NASA Lewis altitude wind tunnel turning vanes.

Ross, R., *Journal of aircraft*, June 1988, 25(6), p.499-502, 10 refs.

Wind tunnels, Air flow, Ducts, Deformation, Ice cover effect, Ice removal, Ice solid interface, Electric equipment, Vibration, Wave propagation, Mechanical tests

50-4101

Mechanical behavior of 18 Ni 200 grade maraging steel at cryogenic temperatures.

Wagner, J.A., *Journal of aircraft*, Oct. 1986, 23(10), p.744-749, 9 refs.

Wind tunnels, Construction materials, Cryogenics, Steels, Impact strength, Tensile properties, Fatigue (materials), Cryogenics, Low temperature tests, Mechanical properties, Standards

50-4102

Method for calculating the anti-erosion stability of tundra soils on the Yamal Peninsula and its basis. [Metodika raschetnoĭ otsenki protivoerozionnoĭ stoĭkosti tundrovykh pochv poluostrova IAmal i ee obosnovanie]

Grigor'ev, V.IA., Bobkov, A.V., *Moscow. Universitet. Vestnik. Seriia 17: Pochvovedenie*, Oct.-Dec. 1995, No.4, p.3-12, In Russian with English summary. 12 refs.

Soil erosion, Tundra soils, Analysis (mathematics), Russia—Yamal Peninsula

50-4103

Climate of the penultimate ice age according to data from an antarctic ice core. [Klimat predposledniĭ lednikovoĭ epokhi po dannym Antarkticheskogo ledianogo kerna]

Kotliakov, V.M., Lorius, K., *Rossiĭskaia akademiia nauk. Izvestiia. Seriia geograficheskaia*, Nov.-Dec. 1993, No.6, p.5-19, In Russian with English summary. 26 refs.

Paleoclimatology, Air temperature, Atmospheric composition, Ice cores, Isotope analysis, Oxygen isotopes, Glacial deposits, Carbon dioxide, Sediments, Antarctica—East Antarctica, Antarctica—Vostok Station

Climatic conditions of the penultimate ice age are analyzed on the basis of isotope-geochemical analyses of the ice core from the Vostok Station borehole drilled to a depth of 2546 m. Chronology of glacial sediments, time changes of the air temperature and gas composition of the former atmosphere have been specified. Results of the Vostok ice core interpretation were compared to analyses of oceanic cores. Climatic interpretation of new results back to 200,000 years B.P. is presented. It is shown that during 140-220,000 years B.P. a long cold period similar to the Last Ice Age existed in East Antarctica.

50-4104

Summer air temperature in the nival-glacial belt of the Central Asian mountain massif. [Letniaia temperatura vozdukha v nival'no-gliatsial'nom poiase Tsentral'noaziatskogo gornogo massiva]

Lebedeva, I.M., *Rossiĭskaia akademiia nauk. Izvestiia. Seriia geograficheskaia*, Nov.-Dec. 1993, No.6, p.20-39, In Russian with English summary. 28 refs.

Air temperature, Ice cover effect, Ice air interface, Temperature gradients, CIS—Central Asia

50-4105

Estimating the energy contribution of precipitating electrons to the balance of the total ozone content in the polar regions. [Otsenka energeticheskogo vklada vysypaiushchikhsia elektronov v balans obshchego soderzhaniia ozona v poliarnoĭ oblasti]

Osechkin, V.V., *Rossiĭskaia akademiia nauk. Doklady*, Dec. 1994, 339(6), p.798-800, In Russian. 15 refs.

Polar atmospheres, Ozone, Atmospheric physics, Stratosphere

50-4106

Distribution of under-ice and ice phytoplankton in Lake Baykal. [Raspredelenie podlednogo i ledΝogo fitoplanktona ozera Baĭkal]

Zavoruev, V.V., Levin, L.A., Granin, N.G., *Rossiĭskaia akademiia nauk. Doklady*, Oct. 1995, 344(5), p.705-708, In Russian. 5 refs.

Plankton, Lake ice, Marine biology, Subglacial observations, Chlorophylls, Russia—Baykal, Lake

50-4107

Characteristics of the structural organization of the photosynthetic apparatus of plants in the Eastern Pamirs. [Osobennosti strukturnoĭ organizatsii fotosinteticheskogo apparata rasteniĭ Vostochnogo Pamira]

P'iankov, V.I., Kondrachuk, A.V., *Rossiĭskaia akademiia nauk. Doklady*, Oct. 1995, 344(5), p.712-716, In Russian. 13 refs.

Photosynthesis, Plant physiology, Alpine tundra, Tundra vegetation, Pamirs

50-4108

Compositional variation of laurite in an alpine ultramafic complex in the Polar Urals. [Tipokhimizm laurita iz al'pinotipnykh giperbazitov Poliarnogo Urala]

Anikina, E.V., Moloshag, V.P., Alimov, V.IU., Kononkova, N.N., *Rossiiskaia akademiia nauk. Doklady*, Oct. 1995, 344(6), p.789-790, In Russian. 5 refs.

Minerals, Geology, Geocryology, Mountains, Russia—Ural Mountains

50-4109

Levels of cesium-137 in bottom sediments of the Laptev Sea. [Urovni tseziia-137 v donnykh otlozheniiakh moria Laptevykh]

Matishov, G.G., Matishov, D.G., Rissanen, Kh., Rachor, A., *Rossiiskaia akademiia nauk. Doklady*, Oct. 1995, 344(6), p.810-811, In Russian. 4 refs.

Radioactivity, Water pollution, Bottom sediment, Radioactive isotopes, Russia—Laptev Sea

50-4110

Fifty years of scientific research at the Chair of Cryolithology and Glaciology (1945-1995). [Nauchnye issledovaniia na Kafedre kriolitologii i gliatsiologii za 50 let (1945-1995 gg.)]

Voĭtkovskiĭ, K.F., Konishchev, V.N., Tumel', N.V., *Moscow. Universitet. Vestnik. Seriia 5: Geografiia*, May-June, 1995, No.3, p.9-14, In Russian with English summary.

Organizations, Research projects, Geocryology, Lithology, Glaciology

50-4111

Migration of water vapor across the boundary between snow cover and frozen soil. [Migratsiia vodianogo para na granitse snezhnogo pokrova s merzlymi gruntami]

Golubev, V.N., Sokratov, S.A., *Moscow. Universitet. Vestnik. Seriia 5: Geografiia*, May-June, 1995, No.3, p.51-55, In Russian with English summary. 9 refs.

Snow cover, Frozen ground mechanics, Water vapor, Vapor transfer, Supersaturation, Sands

50-4112

Forecasting the state of permafrost during climatic warming. [Prognozirovanie sostoianiia mnogoletnemerzlykh porod pri poteplenii klimata]

Cherniad'ev, V.P., Chekhovskiĭ, A.L., *Rossiĭskaia akademiia nauk. Izvestiia. Seriia geograficheskaia*, July-Aug. 1993, No.4, p.107-111, In Russian. 5 refs.

Global warming, Permafrost preservation, Forecasting, Permafrost forecasting

50-4113

Arctic and climate: the Arctic Climate System Study program. [Arktika i klimat: programma ACSYS]

Kondrat'ev, K.IA., Kotliakov, V.M., *Rossiĭskaia akademiia nauk. Izvestiia. Seriia geograficheskaia*, July-Aug. 1993, No.4, p.132-137, In Russian. 29 refs.

International cooperation, Climatology, Air ice water interaction, Models

50-4114

New experimental data on ice VI, ice VII and liquid water phase boundaries. [Novye eksperimental'nye dannye o fazovykh granitsakh l'da VI, l'da VII i vody]

Tkachev, S.N., Nasimov, R.M., Kalinin, V.A., *Rossiiskaia akademiia nauk. Doklady*, May 1995, 342(1), p.108-110, In Russian. 9 refs.

High pressure ice, Phase transformations, Ice water interface

50-4115

Estimating soil water content during global climatic warming. [K otsenke vlagozapasov v pochvakh pri global'nom poteplenii klimata]

Velichko, A.A., Karpachevskiĭ, L.O., Morozova, T.D., *Rossiiskaia akademiia nauk. Doklady*, May 1995, 342(1), p.111-114, In Russian. 8 refs.

Global warming, Climatic changes, Soil water, Tundra soils, Taiga, Steppes, Temperature effects

50-4116

Regularities in the interaction of cryolithozone and gas or gas hydrate beds. [Zakonomernosti vzaimodeĭstviia kriolitozony i gazovoĭ (gazogidratnoĭ) zalezhi]

Mel'nikov, V.P., Romanovskiĭ, N.N., Tipenko, G.S., Barkovskaia, E.N., *Rossiĭskaia akademiia nauk. Doklady*, May 1995, 342(2), p.213-216, In Russian. 12 refs.

Geocryology, Permafrost, Hydrates, Models

50-4117

Temperature fluctuations in climatic optima in the Holocene and Pleistocene. [Kolebaniia temperatury v klimaticheskikh optimumakh golotsena i pleĭstotsena]

Klimanov, V.A., Klimenko, V.V., *Rossiĭskaia akademiia nauk. Doklady*, May 1995, 342(2), p.242-245, In Russian. 15 refs.

Pleistocene, Paleoclimatology, Temperature variations, Air temperature

50-4118

Thermohaline circulation of the Arctic Ocean. [Plotnostnaia tsirkuliatsiia Severnogo Ledovitogo okeana]

Poliakov, I.V., Timokhov, L.A., *Rossiĭskaia akademiia nauk. Doklady*, May 1995, 342(2), p.254-258, In Russian. 10 refs.

Ocean currents, Salinity, Water temperature, Models, Arctic Ocean

50-4119
Role of cryosols in the accumulation of current bottom sediments of the Arctic Ocean. [O roli kriozoleĭ v nakoplenii sovremennykh donnykh osadkov Severnogo Ledovitogo okeana]
Levitan, M.A., Nürnberg, D., Shtaĭn, R., Kassens, H., Vasner, M., Shelekhova, E.S., *Rossiĭskaia akademiia nauk. Doklady,* Oct. 1995, 344(4), p.506-509, In Russian. 13 refs.
Cryogenic soils, Bottom sediment, Marine geology, Arctic Ocean

50-4120
Transfer coefficients of radon-222 across the surface in the Bering and Okhotsk seas and in the northern Pacific Ocean. [Koeffitsienty skorosti perenosa radiona-222 cherez morskuiu poverkhnost' v Beringovom i Okhotskom moriakh i v severnoĭ chasti Tikhogo Okeana]
Kholuĭskiĭ, S.N., Anikiev, V.V., Popov, N.I., *Rossiĭskaia akademiia nauk. Doklady,* Oct. 1995, 344(4), p.543-545, In Russian. 9 refs.
Oceanography, Water chemistry, Wind velocity, Water temperature, Radioactivity, Air water interactions, Pacific Ocean, Bering Sea, Okhotsk Sea

50-4121
System of Cenozoic rifts in the eastern Arctic and its possible implications. [Sistema kaĭnozoĭskikh riftov vostochnoĭ Arktiki i ee vozmozhnoe znachenie]
Bogdanov, N.A., Khain, V.E., Shipilov, E.V., *Rossiĭskaia akademiia nauk. Doklady,* Nov. 1995, 345(1), p.84-86, In Russian. 8 refs.
Tectonics, Geomorphology, Marine geology

50-4122
Phosphorus in river runoff. [Fosfor v rechnom stoke]
Savenko, V.S., Zakharova, E.A., *Rossiĭskaia akademiia nauk. Doklady,* Dec. 1995, 345(5), p.682-685, In Russian. 4 refs.
Runoff, Rivers, Subpolar regions, Water chemistry, Water pollution, Environmental impact

50-4123
New estimation of morphometrical characteristics of Lake Ladoga. [Novoe opredelenie morfometricheskikh kharakteristik Ladozhskogo ozera]
Naumenko, M.A., *Rossiĭskaia akademiia nauk. Doklady.* Dec. 1995, 345(4), p.514-517, In Russian. 3 refs.
Lakes, Lake ice, Lake water, Russia—Ladoga Lake

50-4124
Arctic tanker structural requirement evaluation. Final report.
McCallum, J.S., et al, *Transport Canada. Transportation Development Centre, Montreal. Publication,* Mar. 1995, TP 12471E, Var. p., With French summary. Refs. passim.
Tanker ships, Steels, Steel structures, Ice navigation, Ice loads, Design criteria, Standards, Structural analysis, Cost analysis

50-4125
Origin of the buried loess in the Bohai Sea bottom and the exposed loess along the coastal zone.
Liu, J.P., Zhao, S.L., *Oceanologia et limnologia sinica,* July 1995, 26(4), p.363-368, In Chinese with English summary. 15 refs.
Marine geology, Marine deposits, Bottom sediment, Loess, Desert soils, Eolian soils, Soil dating, Soil formation, Drill core analysis, Paleoclimatology, Desiccation, China—Bohai Sea

50-4126
Study of geochemical evolution and palaeoclimatic fluctuation of Kunteyi Salt Lake in the Qaidam Basin, Qinghai.
Han, F.Q., Huang, Q., Wang, K.J., Wang, H.A., Yuan, L., *Oceanologia et limnologia sinica,* Sep. 1995, 26(5), p.502-508, In Chinese with English summary. 10 refs.
Salt lakes, Lacustrine deposits, Bottom sediment, Quaternary deposits, Geochemistry, Hydrogeochemistry, Stratigraphy, Paleoclimatology, China—Qaidam Basin

50-4127
Aeolian facies belts in the Taklimakan Desert.
Li, B.S., et al, *Acta geologica sinica,* Sep. 1995, 8(3), p.317-328, 18 refs.
Desert soils, Eolian soils, Loess, Sands, Loams, Soil surveys, Soil formation, Soil dating, Paleoclimatology, China—Taklimakan Desert

50-4128
Ecology of fjords and coastal waters.
Skjoldal, H.R., ed, Hopkins, C., ed, Erikstad, K.E., ed, Leinaas, H.P., ed, Amsterdam, Elsevier Science B.V., 1995, 623p., Refs. passim. Proceedings of the Mare Nor Symposium on the Ecology of Fjords and Coastal Waters, Tromsø, Norway, Dec. 5-9, 1994. For selected papers see 50-4129 through 50-4139.
DLC QH541.5.F56M37 1994
Coastal topographic features, Oceanographic surveys, Marine biology, Biomass, Ocean currents, Water transport, Ecology, Ecosystems

50-4129
Latitude as a factor in the calculation of primary production.
Platt, T., Sathyendranath, S., Ecology of fjords and coastal waters. Edited by H.R. Skjoldal, C. Hopkins, K.E. Erikstad, and H.P. Leinaas, Amsterdam, Elsevier Science B.V., 1995, p.3-13, 25 refs.
DLC QH541.5.F56M37 1994
Oceanographic surveys, Biomass, Photosynthesis, Chlorophylls, Plankton, Marine biology, Insolation, Spaceborne photography, Mathematical models

50-4130
Wind forcing of marine primary production in the northern atmospheric low-pressure belt.
Sakshaug, E., Rey, F., Slagstad, D., Ecology of fjords and coastal waters. Edited by H.R. Skjoldal, C. Hopkins, K.E. Erikstad, and H.P. Leinaas, Amsterdam, Elsevier Science B.V., 1995, p.15-25, 13 refs.
DLC QH541.5.F56M37 1994
Oceanographic surveys, Polar atmospheres, Marine atmospheres, Atmospheric circulation, Atmospheric pressure, Wind factors, Air water interactions, Biomass, Chlorophylls, Marine biology, Barents Sea

50-4131
Seasonal variations in the vertical light attenuation coefficient in the Greenland Sea: effect of phytoplankton light absorption.
Dalløkken, R., Sandvik, R., Sakshaug, E., Ecology of fjords and coastal waters. Edited by H.R. Skjoldal, C. Hopkins, K.E. Erikstad, and H.P. Leinaas, Amsterdam, Elsevier Science B.V., 1995, p.33-43, 25 refs.
DLC QH541.5.F56M37 1994
Oceanographic surveys, Light transmission, Optical absorption, Plankton, Photosynthesis, Biomass, Nutrient cycle, Marine biology, Greenland Sea

50-4132
Physical oceanography of coupled fjord-coast systems in northern Norway with special focus on frontal dynamics and tides.
Svendsen, H., Ecology of fjords and coastal waters. Edited by H.R. Skjoldal, C. Hopkins, K.E. Erikstad, and H.P. Leinaas, Amsterdam, Elsevier Science B.V., 1995, p.149-164, 23 refs.
DLC QH541.5.F56M37 1994
Oceanographic surveys, Coastal topographic features, Air water interactions, Wind factors, Ocean currents, Tides, Water transport, Norway

50-4133
Topographic influence on the flow field off Lofoten-Vesterålen.
Orvik, K.A., Lundberg, L., Mork, M., Ecology of fjords and coastal waters. Edited by H.R. Skjoldal, C. Hopkins, K.E. Erikstad, and H.P. Leinaas, Amsterdam, Elsevier Science B.V., 1995, p.165-175, 7 refs.
DLC QH541.5.F56M37 1994
Oceanographic surveys, Coastal topographic features, Bottom topography, Topographic effects, Ocean currents, Water transport, Norway

50-4134
Examination of local circulation in a wide, stratified fjord including exchange of water with the adjacent ocean, due to constant local upfjord wind.
Asplin, L., Ecology of fjords and coastal waters. Edited by H.R. Skjoldal, C. Hopkins, K.E. Erikstad, and H.P. Leinaas, Amsterdam, Elsevier Science B.V., 1995, p.177-184, 10 refs.
DLC QH541.5.F56M37 1994
Oceanographic surveys, Coastal topographic features, Topographic effects, Atmospheric circulation, Air water interactions, Wind factors, Ocean currents, Water transport, Norway

50-4135
Study on the effect of local wind on the dynamics of the upper layer in the inner part of Malangen.
Leth, O.K., Ecology of fjords and coastal waters. Edited by H.R. Skjoldal, C. Hopkins, K.E. Erikstad, and H.P. Leinaas, Amsterdam, Elsevier Science B.V., 1995, p.185-194, 15 refs.
DLC QH541.5.F56M37 1994
Oceanographic surveys, Coastal topographic features, Topographic effects, Air water interactions, Wind factors, Ocean currents, Water transport, Norway

50-4136
Some applications of AVHRR and CZCS satellite data in studies of the Barents and Kara seas.
Kögeler, J., Anselme, B., Falk-Petersen, S., Ecology of fjords and coastal waters. Edited by H.R. Skjoldal, C. Hopkins, K.E. Erikstad, and H.P. Leinaas, Amsterdam, Elsevier Science B.V., 1995, p.219-228, 27 refs.
DLC QH541.5.F56M37 1994
Polar atmospheres, Atmospheric circulation, Air pollution, Water pollution, Air ice water interaction, Ice water interface, Ice cover effect, Drift, Ocean currents, Spaceborne photography, Barents Sea, Russia—Kara Sea

50-4137
Fresh water in Svalbard fjord ecosystems.
Węsławski, J.M., Koszteyn, J., Zajaczkowski, M., Wiktor, J., Kwaśniewski, S., Ecology of fjords and coastal waters. Edited by H.R. Skjoldal, C. Hopkins, K.E. Erikstad, and H.P. Leinaas, Amsterdam, Elsevier Science B.V., 1995, p.229-241, 35 refs.
DLC QH541.5.F56M37 1994
Glacier melting, Calving, Ice water interface, Meltwater, Runoff, Outwash, Suspended sediments, Ecosystems, Ecology, Marine biology, Environmental impact, Norway—Svalbard

50-4138
Oceanographic conditions of Murman coastal biocenoses.
Boĭtsov, V.D., Nesvetova, G.I., Ecology of fjords and coastal waters. Edited by H.R. Skjoldal, C. Hopkins, K.E. Erikstad, and H.P. Leinaas, Amsterdam, Elsevier Science B.V., 1995, p.243-255, 16 refs.
DLC QH541.5.F56M37 1994
Oceanographic surveys, Ocean currents, Water temperature, Salinity, Biomass, Nutrient cycle, Marine biology, Ecosystems, Ecology, Barents Sea, Russia—Murman Coast

50-4139
Biology of high latitude kelp.
Dunton, K.H., Dayton, P.K., Ecology of fjords and coastal waters. Edited by H.R. Skjoldal, C. Hopkins, K.E. Erikstad, and H.P. Leinaas, Amsterdam, Elsevier Science B.V., 1995, p.499-507, 57 refs.
DLC QH541.5.F56M37 1994
Marine biology, Algae, Plant ecology, Plant physiology, Biomass, Photosynthesis, Acclimatization, Cold tolerance, Cryobiology

50-4140
North Atlantic deep-sea sedimentation of Late Quaternary tephra from the Iceland hotspot.
Lacasse, C., Sigurdsson, H., Carey, S., Paterne, M., Guichard, F., *Marine geology*, Jan. 1996, 129(3-4), p.207-235, Refs. p.233-235.
Marine geology, Quaternary deposits, Bottom sediment, Volcanic ash, Sedimentation, Stratigraphy, Sediment transport, Distribution, Pack ice, Ice rafting, Drill core analysis, Geochronology, Atlantic Ocean

50-4141
Low-temperature phase transition of water confined in mesopores probed by NMR. Influence on pore size distribution.
Hansen, E.W., Stöcker, M., Schmidt, R., *Journal of physical chemistry*, Feb. 8, 1996, 100(6), p.2195-2200, 11 refs.
Water structure, Ice physics, Ice water interface, Low temperature tests, Phase transformations, Freezing points, Porous materials, Porosity, Nuclear magnetic resonance, Temperature effects, Thermodynamics

50-4142
Heterogeneous interactions of OH and HO_2 radicals with surfaces characteristic of atmospheric particulate matter.
Cooper, P.L., Abbatt, J.P.D., *Journal of physical chemistry*, Feb. 8, 1996, 100(6), p.2249-2254, 36 refs.
Polar atmospheres, Polar stratospheric clouds, Aerosols, Cloud physics, Adsorption, Mass transfer, Cloud physics, Ice vapor interface, Simulation
The heterogeneous interactions of OH and HO_2 radicals with a number of surfaces characteristic of atmospheric particulate matter have been studied by using a low-temperature flow tube coupled to a resonance fluorescence detector. The study relates to the chemistry of ozone depletion. In particular, the mass accommodation coefficients of both OH and HO_2 on supercooled sulfuric acid solutions have been measured. Radical uptake coefficients (γ) were also measured on a variety of solid surfaces prevalent in the atmosphere: water ice, NH_4HSO_4 and $(NH_4)_2SO_4$. On water ice, it was found that the uptake coefficients of both OH and HO_2 were relatively small. The OH uptake coefficient could be significantly increased by either adsorbing HNO_3 to the surface or melting the ice surface by exposure to relatively high partial pressures of HCl. (Auth. mod.)

50-4143
Mechanisms and temperatures for the freezing of sulfuric acid aerosols measured by FTIR extinction spectroscopy.
Bertram, A.K., Patterson, D.D., Sloan, J.J., *Journal of physical chemistry*, Feb. 8, 1996, 100(6), p.2376-2383, 27 refs.
Polar atmospheres, Polar stratospheric clouds, Cloud physics, Aerosols, Freezing points, Supercooling, Heterogeneous nucleation, Ice spectroscopy, Simulation
The authors have measured the freezing curve of liquid H_2SO_4/H_2O aerosol droplets having average radii of approximately 0.2 μm, in a simulation of polar stratospheric chemistry. At the freezing point, a microcrystallite of pure ice ($H_2O(s)$) nucleates in the aerosol droplet, and this causes a small change in the spectrum near 3250/cm. By recording the temperatures at which the crystallites appear for different acid concentrations, the freezing curve was mapped. The study describes the experimental technique and reports the freezing curve for the concentration range up to 35 wt% H_2SO_4, which corresponds to the first eutectic point on the phase diagram of the bulk material. The aerosol supercools by about 35 K below the temperature at which the corresponding bulk material freezes. These data show that the overall freezing mechanism is similar to that of the bulk solution: after nucleation, the crystallite grows with decreasing temperature, causing the remaining acid to become more concentrated due to the removal of H_2O until eventually a eutectic mixture forms. (Auth. mod.)

50-4144
Uptake of chlorine dioxide by model polar stratospheric cloud surfaces: ultrahigh-vacuum studies.
Graham, J.D., Roberts, J.T., Brown, L.A., Vaida, V., *Journal of physical chemistry*, Feb. 22, 1996, 100(8), p.3115-3120, 40 refs.
Polar atmospheres, Polar stratospheric clouds, Ice vapor interface, Cloud physics, Amorphous ice, Aerosols, Adsorption, Cohesion, Water films, Simulation, Temperature effects
An investigation of the interaction of chlorine dioxide (OClO) with the surface of ice is reported, in tests which simulate polar stratospheric cloud chemistry. Experiments were carried out under ultrahigh vacuum on films between 10 and 100 water monolayers thick. The initial OClO adsorption probability on ice at 100 K is high, approaching unity on both the crystalline and amorphous surfaces. At low coverages, OClO is quantitatively incorporated into the ice bulk, where it resides until sublimation of the ice film near 185 K. An adsorbed state of OClO is formed at moderate exposures. Chlorine dioxide desorbs from ice at approximately 130 K. At high exposures, OClO condenses to form a multilayer film, which sublimes near 135 K; the sublimation energy is 38 kJ/mol. If adsorbed OClO is covered with an ice film 13 monolayers thick, OClO is trapped within the film, and desorption is completely suppressed until the onset of ice sublimation. (Auth. mod.)

50-4145
New look at the melting layer.
Drummond, F.J., Rogers, R.R., Cohn, S.A., Ecklund, W.L., Carter, D.A., Wilson, J.S., *Journal of the atmospheric sciences*, Mar. 1, 1996, 53(5), p.759-769, 14 refs.
Precipitation (meteorology), Cloud physics, Rain, Drops (liquids), Falling snow, Snow melting, Snowflakes, Mass transfer, Radar echoes, Spectra, Phase transformations

50-4146
Fossil burrows of mammals in the loess-ice deposits of the Kolyma-Indigirka Lowland.
Gubin, S.V., Khasanov, B.F., *Doklady biological sciences*, Jan.-Feb. 1996, 346(1-6), p.26-27, Translated from Doklady Akademii nauk. 4 refs.
Paleoecology, Loess, Ground ice, Sediments, Sampling, Fossils, Radioactive age determination, Russia—Yakutia

50-4147
Contemporary status of bottom fauna in the Chernaya Bay (Novaya Zemlya Archipelago).
Matishov, G.G., Denisenko, S.G., *Doklady biological sciences*, Jan.-Feb. 1996, 346(1-6), p.28-30, Translated from Doklady Akademii nauk. 5 refs.
Oceanography, Ocean bottom, Marine biology, Biomass, Ecology, Classifications, Sampling, Statistical analysis, Environmental tests, Radioactive wastes, Russia—Novaya Zemlya

50-4148
"Frozen" flowline reduces strain on pipe wall during tow-out. *Offshore*, Mar. 1996, 56(3), p.S4.
Pipeline freezing, Pipe laying, Ocean bottom, Subsurface structures

50-4149
Rates of rock surface lowering, Princess Elizabeth Land, eastern Antarctica.
Spate, A.P., Burgess, J.S., Shevlin, J., *Earth surface processes and landforms*, Sep. 1995, 20(6), p.567-573, 23 refs.
Geomorphology, Periglacial processes, Bedrock, Weathering, Surface structure, Wind erosion, Sediment transport, Abrasion, Statistical analysis, Antarctica—Vestfold Hills, Antarctica—Larsemann Hills
A series of micro-erosion-meter sites on different rock types and in differing wind regimes was established and re-read after four years on two sites in the Larsemann and Vestfold Hills. These two oases in East Antarctica are subjected to both wind abrasion and salt wedging. The measurements displayed bimodal distributions, indicating that both abrasion and single-grain detachment could be observed. Surface lowering rates of 0.015 and 0.022 mm/a were demonstrated for the Larsemann and Vestfold Hills, respectively. (Auth.)

50-4150
Paleoclimate data constraints on climate sensitivity: the paleocalibration method.
Covey, C., Sloan, L.C., Hoffert, M.I., *Climatic change*, Feb. 1996, 32(2), p.165-184, 75 refs.
Paleoclimatology, Climatic changes, Long range forecasting, Global warming, Surface temperature, Radiant heating, Models, Simulation, Thermodynamics

50-4151
Frost resistance and pH of cell effusate in needles of artificially deacclimated Scots pine (*Pinus sylvestris*).
Taulavuori, K., Taulavuori, E., Niinimaa, A., Laine, K., *Physiologia plantarum*, Jan. 1996, 96(1), p.111-117, 41 refs.
Trees (plants), Plant tissues, Viability, Frost resistance, Cold tolerance, Plant physiology, Cold weather tests, Simulation, Temperature effects, Acclimatization

50-4152
Boundary-layer ozone depletion as seen in the Norwegian arctic in spring.
Solberg, S., Schmidbauer, N., Semb, A., Stordal, F., Hov, O., *Journal of atmospheric chemistry*, Mar. 1996, 23(3), p.301-332, 29 refs.
Polar atmospheres, Air pollution, Atmospheric boundary layer, Atmospheric composition, Wind direction, Ozone, Aerosols, Hydrocarbons, Seasonal variations, Sampling, Statistical analysis, Static stability, Norway

50-4153
Numerical landscapes: static, kinematic and dynamic process-form relations.
Richards, K., et al, *Zeitschrift für Geomorphologie. Supplementband*, 1995, Vol.101 (suppl.), International Conference on Geomorphology, 3rd, Hamilton, Ontario, Canada, Aug. 23-28, 1993. Proceedings. Advances in geomorphometry. Edited by R.J. Pike et al, p.201-220, With German and French summaries. 38 refs.
Geomorphology, Glacial hydrology, Glacier melting, Subglacial drainage, Runoff, Hydrography, Terrain identification, Topographic features, Topographic effects, Mathematical models, Computerized simulation, Switzerland—Haut Glacier d'Arolla

50-4154
Predictions of ice contact forces on a marine screw propeller during the propeller-ice cutting process.
Veitch, B., *Acta polytechnica Scandinavica. Mechanical engineering series*, 1995, No.118, 140p., Refs. p.105-110.
Ships, Propellers, Sea ice, Ice solid interface, Ice cutting, Ice breaking, Crack propagation, Ice mechanics, Loads (forces), Mathematical models, Simulation

50-4155
Snow.
Graf, D., Gartner, W., Kocin, P., *Weatherwise*, Feb.-Mar. 1996, 49(1), p.48-52.
Weather observations, Precipitation (meteorology), Snowfall, Snowstorms, Snow accumulation, Seasonal variations

50-4156
Some innovations in snow and ice control equipment. *Public works*, Mar. 1995, 126(3), p.34-35.
Winter maintenance, Road maintenance, Snow removal, Snow removal equipment, Ice control, Design

50-4157
Observational study of the katabatic wind confluence zone near Siple Coast, West Antarctica.
Bromwich, D.H., Liu, Z., *Monthly weather review*, Mar. 1996, 124(3), p.462-477, 40 refs.
Wind (meteorology), Polar atmospheres, Atmospheric pressure, Wind velocity, Wind direction, Topographic effects, Ice cover effect, Turbulent boundary layer, Ice air interface, Synoptic meteorology, Antarctica—Siple Coast
A month-long field program to study the springtime katabatic wind confluence zone has been carried out near Siple Coast. Ground-based remote sensing equipment (sodar and RASS), along with conventional observations, were used. By combining the analyses of surface observations with wind and temperature profiles, the following picture for the cross-sectional structure of the confluence zone emerges. A relatively cold katabatic airflow, which probably comes from East Antarctica, occupies the layer between the surface and roughly 500 m AGL. Low-level jets are present below 200 m AGL and are stronger near the Transantarctic Mountains. Weak-inversion-layer tops are found near 500 m AGL, which is roughly equal to the depth of the cold katabatic flow. This warm flow originates near the surface far upslope in the vicinity of Byrd Station. A baroclinic zone, formed where the two drainage flows are horizontally adjacent, appears to become unstable with some frequency to generate mesoscale cyclones. (Auth. mod.)

50-4158
Abundance and production of bacteria and viruses in the Bering and Chukchi Seas.
Steward, G.F., Smith, D.C., Azam, F., *Marine ecology progress series*, Feb. 8, 1996, 131(1-3), p.287-300, 62 refs.
Oceanography, Marine biology, Microbiology, Sampling, Bacteria, Ecology, Ecosystems, Biomass, Geochemical cycles, Bering Sea, Chukchi Sea

50-4159

Occurrence of an algal bloom under arctic pack ice.

Gradinger, R., *Marine ecology progress series*, Feb. 8, 1996, 131(1-3), p.301-305, 24 refs.

Marine biology, Algae, Plankton, Biomass, Ecosystems, Sea ice, Ice melting, Subglacial drainage, Ponds, Subglacial observations, Sampling, Ice cores, Ice cover effect, Ice water interface, Arctic Ocean

50-4160

Effects of seasonal pack ice on the distribution of macrozooplankton and micronekton in the northwestern Weddell Sea.

Kaufmann, R.S., Smith, K.L., Jr., Baldwin, R.J., Glatts, R.C., Robison, B.H., Reisenbichler, K.R., *Marine biology*, Dec. 1995, 124(3), p.387-397, 51 refs.

Marine biology, Ecology, Plankton, Biomass, Distribution, Pack ice, Ice cover effect, Sounding, Underwater acoustics, Subglacial observations, Sampling, Antarctica—Weddell Sea

Bottom-moored free-vehicle acoustic instruments were used in concert with midwater trawls and baited traps to examine the abundance, size distribution and vertical distribution of pelagic organisms in the uppermost 100 m of the water column during the austral spring of 1992 in two areas of the northwestern Weddell Sea, one covered by seasonal pack ice and the other free of ice cover. Acoustic targets were more abundant and significantly larger at the open-water station than beneath pack ice. However, targets at the ice-covered site exhibited a pronounced diel pattern, with the largest targets detected only at night. Samples from night trawls at the ice-covered site contained several species of large, vertically-migrating mesopelagic fishes, whereas these species were absent from trawls taken during the day. In addition, baited traps deployed in pack ice just beneath the ice-water interface collected large numbers of scavenging lysianassoid amphipods, while deeper traps beneath the ice and traps at the open-water station were empty, indicating the presence of a scavenging community associated with the undersurface of the ice. These results support the idea that mesopelagic organisms migrate closer to the surface beneath pack ice than in open water, where they risk predation by seabirds. (Auth.)

50-4161

Water chemistry and periphyton in an alpine wetland.

Toetz, D., *Hydrobiologia*, Sep. 15, 1995, 312(2), p.93-105, 56 refs.

Wetlands, Water chemistry, Ecosystems, Algae, Biomass, Alpine landscapes, Snowmelt, Meltwater, Nutrient cycle, Sampling

50-4162

Rotifers from the Canadian High Arctic (Devon Island, Northwest Territories).

De Smet, W.H., Beyens, L., *Hydrobiologia*, Nov. 3, 1995, Vol.313/314, Rotifer Symposium, 7th, Mikołajki, Poland, June 6-11, 1994. Proceedings, p.29-34, 41 refs.

Limnology, Ponds, Ecology, Plankton, Biomass, Sampling, Classifications, Canada—Northwest Territories—Devon Island

50-4163

Distribution and ecology of rotifer communities in high-altitude alpine sites—a multivariate approach.

Jersabek, C.D., *Hydrobiologia*, Nov. 3, 1995, Vol.313/314, Rotifer Symposium, 7th, Mikołajki, Poland, June 6-11, 1994. Proceedings, p.75-89, 42 refs.

Ecology, Limnology, Plankton, Alpine landscapes, Distribution, Sampling, Biogeography, Classifications, Statistical analysis

50-4164

Uptake of chlorine dioxide by model PSCs under stratospheric conditions.

Brown, L.A., Vaida, V., Hanson, D.R., Graham, J.D., Roberts, J.T., *Journal of physical chemistry*, Feb. 22, 1995, 100(8), p.3121-3125, 47 refs.

Polar atmospheres, Polar stratospheric clouds, Cloud physics, Aerosols, Adsorption, Ice vapor interface, Surface properties, Simulation

The uptake of chlorine dioxide by ice at temperatures approaching those needed for polar stratospheric cloud (PSC) formation in the antarctic stratosphere was studied. The two approaches used in this investigation involved modeling the surface coverage using kinetic parameters obtained in an ultrahigh-vacuum surface experiment and comparing these results to the uptake measured in a flow tube apparatus. For an OClO gas phase concentration of 5×10^{10} molecules/cm^3, a surface coverage of $2 \times 10^{-4\pm1}$ monolayers of OClO was estimated on the ice at 189 K from both methods. For an average OClO concentration in the antarctic stratosphere of 2×10^9 molecules/cm^3, a surface coverage of $7 \times 10^{-6\pm1}$ monolayers of OClO on PSCs is predicted. (Auth. mod.)

50-4165

Remote sensing comprehensive research in water and soil conservation forest region of loess plateau. [Huangtu gaoyuan shui tu baochi linqu yaogan zonghe yanjiu]

Wang, C.Y., ed, Liu, S.R., ed, Luo, X.Y., ed, Beijing, Zhongguo kexue jishu chubanshe (China Science and Technology Press), 1990, 402p., In Chinese with English title. Refs. passim.

DLC S625.C55H83 1990 Orien China

Soil surveys, Soil erosion, Soil conservation, Land reclamation, Loess, Steppes, Forestry, Vegetation patterns, Revegetation, Regional planning, Spaceborne photography, China

50-4166

Forty years of disaster mitigation in Xinjiang. [Xinjiang jianzai sishi nian]

Zhu, L.R., ed, Ye, M.Q., ed, Xu, D.Y., ed, Beijing, Dizhen chubanshe (Seismology Press), 1993, 312p., In Chinese with English preface and table of contents. Refs. passim.

DLC GB5011.7.H75 1993 Orien China

Snowstorms, Floods, Avalanches, Earthquakes, Cold weather survival, Cold weather operation, Accidents, Rescue operations, Cost analysis, Regional planning, China—Xinjiang

50-4167

Avalanche report 1992/93. Documentation and experts-contributions. [Lawinenbericht 1992/93. Dokumentation und Fachbeiträge]

Luzian, R., Rammer, L., Schaffhauser, H., *Forstliche Bundesversuchsanstalt. FBVA Berichte*, 1995, No.91, 52p., In German with English summary. 18 refs. For selected paper see 50-4168.

Avalanches, Avalanche tracks, Snowstorms, Wind factors, Accidents, Austria

50-4168

Feasibility study in the use of satellite remote sensing as a fast reaction tool for natural disaster relief. European Space Agency Report 1994 (extract).

Granica, K., *Forstliche Bundesversuchsanstalt. FBVA Berichte*, 1995, No.91, Lawinenbericht 1992/93. Dokumentation und Fachbeiträge (Avalanche report 1992/93. Documentation and experts-contributions), p.47-51.

Avalanches, Avalanche tracks, Avalanche forecasting, Topographic surveys, Spaceborne photography, Data transmission, Rescue operations

50-4169

On dynamics of ice-structure interaction.

Kajaste-Rudnitski, J., *Finland. Technical Research Centre (Valtion teknillinen tutkimuskeskus). VTT publications*, 1995, No.257, 104p. + appends., Ph.D. thesis to be defended at the Helsinki University of Technology. Refs. p.98-104.

Offshore structures, Ice solid interface, Ice loads, Ice pressure, Ice friction, Ice elasticity, Ice cover strength, Ice deformation, Ice breaking, Mathematical models

50-4170

Mesoscale and microscale characteristics of a CASP II severe ice pellet storm.

Hanesiak, J.M., North York, Ontario, York University, 1994, 195p., M.S. thesis. Refs. p.190-195.

Snow pellets, Ice storms, Marine meteorology, Fronts (meteorology), Precipitation (meteorology), Ice air interface, Ice cover effect, Weather forecasting, Ice forecasting, Radar tracking, Canada—Newfoundland

50-4171

Sea ice radar backscatter modeling, measurements, and the fusion of active and passive microwave data.

Beaven, S.G., Lawrence, University of Kansas, 1995, 264p., University Microfilms order No.9544817, Ph.D. thesis. Refs. p.191-203.

Ice surveys, Sea ice distribution, Ice conditions, Ice detection, Freezeup, Radiometry, Synthetic aperture radar, Radio echo soundings, Backscattering, Spaceborne photography, Image processing, Mathematical models

50-4172

Frost resistance of high-performance concrete.

Folliard, K.J., Berkeley, University of California, 1995, 136p., University Microfilms order No.9602545, Ph.D. thesis. Refs. passim.

Concrete freezing, Concrete strength, Concrete durability, Concrete admixtures, Frost resistance, Freeze thaw tests

50-4173

Sediment transport in terms of grain fractions. [Fraktionsweiser Geschiebetransport]

Hunziker, R.P., *Zürich. Eidgenössische Technische Hochschule. Versuchsanstalt für Wasserbau, Hydrologie und Glaziologie. Mitteilungen*, 1995, No.138, 209p., In German with English summary. Refs. p.180-186.

River flow, Hydraulics, Water erosion, Sediment transport, Suspended sediments, Bottom sediment, Alluvium, Particle size distribution, Mathematical models, Computerized simulation, Switzerland

50-4174

Construction on creeping ice. [Bauen auf kriechendem Eis]

Vonder Mühll, D., Keusen, H.R., *Schweizerische technische Zeitschrift*, 1995, No.10, p.45-48, In German.

Stations, Foundations, Permafrost beneath structures, Permafrost preservation, Frozen rock strength, Soil creep, Soil stabilization, Switzerland

50-4175

Nature of hydroelectric power exploitation. [Das Wesen der Wasserkraftnutzung]

Vischer, D., *Neue Zürcher Zeitung*, Feb. 7, 1996, 31(67), 3p., In German.

Water reserves, Electric power, Economic development, Switzerland

50-4176

Intercomparison of snow retrieval algorithms by means of spaceborne microwave radiometry.

Rott, H., Nagler, T., ESA/NASA International Workshop, Saint Lary, France, Jan. 11-15, 1993. Passive microwave remote sensing of land-atmosphere interactions. Edited by B.J. Choudhury, Y.H. Kerr, E.G. Njoku, and P. Pampaloni, Zeist, Netherlands, VSP BV, 1995, p.227-243, 27 refs.

Snow surveys, Snow cover distribution, Snow depth, Snow water equivalent, Snow surface temperature, Spaceborne photography, Radiometry, Radio echo soundings, Image processing, Mathematical models

50-4177

Canadian development and use of snow cover information from passive microwave satellite data.

Goodison, B.E., Walker, A.E., ESA/NASA International Workshop, Saint Lary, France, Jan. 11-15, 1993. Passive microwave remote sensing of land-atmosphere interactions. Edited by B.J. Choudhury, Y.H. Kerr, E.G. Njoku, and P. Pampaloni, Zeist, Netherlands, VSP BV, 1995, p.245-262, 19 refs.

Snow surveys, Snow cover distribution, Snow water equivalent, Snow hydrology, Runoff forecasting, Radiometry, Terrain identification, Vegetation factors, Spaceborne photography, Canada

50-4178

Application of SSM/I data for snow cover and climate research.

Armstrong, R.L., ESA/NASA International Workshop, Saint Lary, France, Jan. 11-15, 1993. Passive microwave remote sensing of land-atmosphere interactions. Edited by B.J. Choudhury, Y.H. Kerr, E.G. Njoku, and P. Pampaloni, Zeist, Netherlands, VSP BV, 1995, p.263-272, 41 refs.

Snow surveys, Snow cover distribution, Snow depth, Snow water equivalent, Radio echo soundings, Radiometry, Spaceborne photography, Data processing, Data transmission

50-4179

Size parameters of snow grains in scattering and emission models.

Jin, Y.Q., ESA/NASA International Workshop, Saint Lary, France, Jan. 11-15, 1993. Passive microwave remote sensing of land-atmosphere interactions. Edited by B.J. Choudhury, Y.H. Kerr, E.G. Njoku, and P. Pampaloni, Zeist, Netherlands, VSP BV, 1995, p.273-283, 8 refs.

Snow surveys, Snow cover structure, Snow density, Snow water content, Ice crystal size, Particle size distribution, Microwaves, Wave propagation, Scattering, Mathematical models

50-4180

Monitoring snow cover on the Tibetan Plateau using passive microwave satellite data.

Robinson, D.A., Spies, T.E., ESA/NASA International Workshop, Saint Lary, France, Jan. 11-15, 1993. Passive microwave remote sensing of land-atmosphere interactions. Edited by B.J. Choudhury, Y.H. Kerr, E.G. Njoku, and P. Pampaloni, Zeist, Netherlands, VSP BV, 1995, p.285-294, 18 refs.

Snow surveys, Snow cover distribution, Snow depth, Snow density, Radio echo soundings, Radiometry, Spaceborne photography, Image processing, China—Qinghai-Xizang Plateau

50-4181

Passive microwave remote sensing of snow: volume scattering in snow and parametric inversion of snow parameters with an artificial neural network.

Tsang, L., Davis, D.T., West, R.D., Chen, Z.X., Hwang, J.N., Winebrenner, D.P., ESA/NASA International Workshop, Saint Lary, France, Jan. 11-15, 1993. Passive microwave remote sensing of land-atmosphere interactions. Edited by B.J. Choudhury, Y.H. Kerr, E.G. Njoku, and P. Pampaloni, Zeist, Netherlands, VSP BV, 1995, p.295-314, 31 refs.

Snow surveys, Snow density, Snow temperature, Snow ice interface, Firn stratification, Ice crystal size, Particle size distribution, Radio echo soundings, Radiometry, Microwaves, Scattering, Computerized simulation, Antarctica—Veststraumen Glacier

Passive microwave remote sensing of snow is affected by volume scattering which can be a result of layering or scattering by ice grains. Because of the smallness of ice grains, layering plays a dominant role at low microwave frequencies. The brightness temperature of antarctic firn at C-band with a centimeter layering model is studied. Comparisons are made with ground-based experimental data using ground truth determined density layering profiles. Scattering by ice grains in snow is important at frequencies above 18 GHz. The authors study the volume scattering effects with the dense media radiative transfer theory. The inversion of snow parameters from passive microwave remote sensing measurements using a neural network trained with a dense media multiple scattering model is also performed. Inversion of five parameters is simultaneously performed from five brightness temperatures. The five parameters are: mean-grain size of ice particles in snow, snow density, snow temperature, snow depth, and the real part of the ground permittivity. A constrained iterative scheme is used with error analysis illustration. The neural network constrained iterative inversion algorithm is also illustrated by performing synthetic mapping of a terrain where all five parameters are simultaneously inverted. The reconstructed contours are in good agreement with the original ones. (Auth. mod.)

50-4182

Bubblers for ice melting.

Ashton, G.D., MP 3809, Handbook of fluid dynamics and fluid machinery. Vol.3. Applications of fluid dynamics., New York, John Wiley & Sons, Inc., 1996, p.1970-1989, Refs. passim.

DLC TA357.H286 1996

Bubbling, Ice control, Artificial melting, Ice melting, Ice water interface, Hydraulic jets, Compressors

50-4183

Structure of the ice nanocrystal surface from simulated versus experimental spectra of adsorbed CF_4.

Buch, V., Delzeit, L., Blackledge, C., Devlin, J.P., *Journal of physical chemistry,* Feb. 29, 1996, 100(9), p.3732-3744, 30 refs.

Ice physics, Ice crystal structure, Molecular structure, Ice vapor interface, Adsorption, Ice surface, Surface roughness, Ice spectroscopy, Spectra, Simulation

50-4184

Simple relationship between the properties of isotopic water.

Vedamuthu, M., Singh, S., Robinson, G.W., *Journal of physical chemistry,* Feb. 29, 1996, 100(9), p.3825-3827, 26 refs.

Water structure, Density (mass/volume), Indexes (ratios), Isotopes, Temperature effects, Viscosity, Self diffusion, Thermodynamic properties, Statistical analysis

50-4185

Microcracking due to grain boundary sliding in polycrystalline ice under uniaxial compression.

Elvin, A.A., Shyam Sunder, A.A., *Acta materialia,* Jan. 1996, 44(1), p.43-56, 28 refs.

Ice mechanics, Ice cracks, Ice microstructure, Anisotropy, Ice deformation, Defects, Crack propagation, Nucleation, Stress concentration, Grain size, Sliding, Models

50-4186

Warm core in a polar low observed with a satellite microwave sounding unit.

Forsythe, J.M., Vonder Haar, T.H., *Tellus,* Mar. 1996, 48A(2), p.193-208, 33 refs.

Marine atmospheres, Climatology, Turbulent boundary layer, Fronts (meteorology), Remote sensing, Spacecraft, Sounding, Radiometry, Brightness, Air temperature, Temperature measurement, Heating

50-4187

Case studies of geoprocesses and environmental change in mountains of northern Sweden.

Rapp, A., *Geografiska annaler,* 1995, 77A(4), p.189-198, 14 refs.

Mountains, Arctic landscapes, Soil erosion, Mass movements (geology), Landslides, Permafrost transformation, Mudflows, Slope processes, Snowmelt, Avalanche erosion, Climatic factors, Geomorphology, Sweden—Abisko

50-4188

Snowmelt and slush torrents—preliminary report from a field campaign in Kärkevagge, Swedish Lappland.

Gude, M., Scherer, D., *Geografiska annaler,* 1995, 77A(4), p.199-206, 15 refs.

Geomorphology, Mountains, Arctic landscapes, Snow hydrology, Snow cover stability, Snowmelt, Meltwater, Surface drainage, Slush, Mass flow, Stream flow, Hydraulics, Sweden—Lapland

50-4189

Temporal trends in the quality of streamwater in an alpine environment: Green Lakes Valley, Colorado Front Range, U.S.A.

Caine, N., *Geografiska annaler,* 1995, 77A(4), p.207-220, 21 refs.

Alpine landscapes, Watersheds, Precipitation (meteorology), Aerosols, Streams, Snowmelt, Runoff, Water chemistry, Chemical properties, Sampling, Seasonal variations, Environmental tests, United States—Colorado—Front Range

50-4190

Fluvial morphology and streamflow on Deception Island, Antarctica.

Inbar, M., *Geografiska annaler,* 1995, 77A(4), p.221-230, 25 refs.

Geomorphology, Stream flow, Periglacial processes, Snowmelt, Sediment transport, Surface drainage, Hydraulics, Runoff, Temperature effects, Antarctica—Deception Island

Hydraulic geometry, runoff and sediment transport processes were studied during the 1991 summer season in two small pyroclastic drainage basins on Deception I., South Shetland Is. Daily discharge measurements were conducted in two channels draining 0.65 km^2 and 0.12 km^2. The empirical relationship between the depth, velocity and width exponents in channels with non-cohesive material is valid for the studied area. Width is relatively conservative during increase of water discharge. Runoff was almost continuous for about 40 days, showing a strong association between streamflow and temperature. Two main periods are distinguished in the annual hydrological regime: runoff during a short melting period of snow and glaciers; and snow cover and frozen period of the entire drainage area. Temperature is the main factor affecting the hydrological regime of the rivers. Snow availability during the summer season determines discharge water volumes in the nonglaciated basin. Fluvial sediment transport for the 1991 season was 46 tons/km^2/yr, one order of magnitude less than values for arctic rivers, but similar to average yearly sediment yield values of pyroclastic basins in mid-latitude areas. (Auth. mod.)

50-4191

Lichenometric analysis of the Kärkerieppe slush-avalanche fan, Kärkevagge, Sweden.

Bull, W.B., Schlyter, P., Brogaard, S., *Geografiska annaler,* 1995, 77A(4), p.231-240, 30 refs.

Geomorphology, Arctic landscapes, Avalanche deposits, Slush, Lichens, Age determination, Statistical analysis, Periodic variations, Sweden—Kärkevagge

50-4192

Holocene climate fluctuations and geomorphic impact of extreme events in Svalbard.

André, M.F., *Geografiska annaler,* 1995, 77A(4), p.241-250, 39 refs.

Geomorphology, Mass flow, Landscape development, Periglacial processes, Slope processes, Slush, Sediments, Geochronology, Periodic variations, Climatic changes, Norway—Spitsbergen

50-4193

Nivation in the High Tatras, Poland.

Rączkowska, Z., *Geografiska annaler,* 1995, 77A(4), p.251-258, 14 refs.

Geomorphology, Alpine landscapes, Mountain soils, Periglacial processes, Slope processes, Nivation, Snowmelt, Weathering, Snow cover effect, Sediment transport, Poland—Tatra Mountains

50-4194

Preliminary investigation of geochemical process responses to potential environmental change in Kärkevagge, northern Scandinavia.

Dixon, J.C., Darmody, R.G., Schlyter, P., Thorn, C.E., *Geografiska annaler,* 1995, 77A(4), p.259-267, 12 refs.

Geomorphology, Arctic landscapes, Bedrock, Weathering, Lithology, Geochemistry, Periglacial processes, Rock properties, Climatic changes, Sweden—Kärkevagge

50-4195

Model for variations in gelifluction rates with temperature and topography: implications for global change.

Kirkby, M.J., *Geografiska annaler,* 1995, 77A(4), p.269-278, 11 refs.

Geomorphology, Climatic changes, Global warming, Slope processes, Soil creep, Solifluction, Active layer, Thaw depth, Subsurface drainage, Mathematical models

50-4196

Investigation of the subsidence and resulting downdrag loads on an oilwell casing at Prudhoe Bay. Final report.

Nair, K., Shuster, J.A., Chang, C.Y., Smith, W.S., Woodward-Lundgren Associates, Oakland, Mar. 1971, 84p. + appends., 10 refs.

Oil wells, Well casings, Dislocations (materials), Soil strength, Stress concentration, Ground thawing, Permafrost preservation, Permafrost heat transfer, Subsidence, Boundary value problems, Mechanical tests, Analysis (mathematics)

50-4197

Changes in ultraviolet radiation reaching the Earth's surface.

Madronich, S., McKenzie, R.L., Caldwell, M.M., Björn, L.O., *Ambio,* May 1995, 24(3), p.143-152, 130 refs.

Ozone, Ultraviolet radiation, Remote sensing, Measurement, Antarctica—Amundsen-Scott Station, Antarctica—Palmer Station

An analysis is presented of improvements made in the quality and quantity of UV measurements made over the past several years. Examples are given of the measurements made in Chile, Argentina, Australia, and New Zealand, showing comparisons with corresponding northern latitudes. Antarctic measurements over the South Pole and Palmer Station are discussed and compared with values measured over San Diego. Global ozone measurements from satellites from 1979-1993 imply significant UV-B increases at mid- and high-latitudes in both hemispheres, but only small changes in the tropics. Global UV levels are predicted to peak at about the turn of the century, then recovery to pre-ozone depletion levels is expected to take place gradually over the ensuing 50 years.

50-4198

Investigations of the East Greenland Continental Margin between 70° and 72°N by deep seismic sounding and gravity studies.

Weigel, W., et al, *Marine geophysical researches,* Apr. 1995, 17(2), p.167-199, 43 refs.

Seismic surveys, Seismic reflection, Gravity, Greenland—Scoresby Sund

50-4199

Ocean-load tides at the South Pole: a validation of recent ocean-tide models.

Agnew, D.C., *Geophysical research letters,* Nov. 15, 1995, 22(22), p.3063-3066, 19 refs.

Tides, Models, Antarctica—Amundsen-Scott Station

Small diurnal and semidiurnal gravity tides are seen at the South Pole because of the loading by and attraction of the ocean tides. These data provide a check on the quality of ocean-tide models, especially in the southernmost ocean, which has historically been the most lacking in tidal data. Ocean-tide models developed in the 1980s did not predict the gravity tides at this location very well. More recent models based on the Topex/Poseidon altimetric data and improved hydrodynamic modeling agree much better with the observations, provided that the tides beneath the ice shelves are included. The level of agreement at this remote location suggests that, loads from very local tides aside, the new generation of ocean-tide models can predict the loading tides to a very high accuracy. (Auth.)

50-4200

Science of the Siberian region; a discussion in the Presidium of the Russian Academy of Sciences. [Nauka Sibirskogo regiona; obsuzhdenie v Prezidiuma RAN]

Mavrina, T.V., ed, p.595-615, In Russian. A discussion in which 21 members participated; held on Jan. 24, 1995.

Research projects, Organizations, Economics, Russia—Siberia

50-4201

Interdependent changes in the frost resistance, photosynthesis and respiration of the ultrastructure of cells and chloroplasts in winter wheat and rye under cold hardening. [Sopriazhennye izmeneniia morozostoĭkosti, fotosinteza i dykhaniia, ul'trastruktury kletok i khloroplastov u ozimoĭ pshenitsy i rzhi pri kholodovom zakalivanii]

Klimov, S.V., Astakhova, N.V., Trunova, T.I., *Rossiĭskaia akademiia nauk. Doklady,* July 1994, 337(2), p.276-279, In Russian. 13 refs.

Frost resistance, Plant tissues, Plant physiology, Plants (botany), Cold tolerance

50-4202

Disturbances in the thermohaline structure of the near-surface ocean layer in the wake of an iceberg. [Vozmushcheniia termokhalinnoĭ struktury pripoverkhnostnogo sloia okeana v slede aĭsberga]

Abaza, V.P., Korostelev, V.G., Popov, I.K., *Rossiĭskaia akademiia nauk. Doklady,* June 1995, 342(5), p.686-688, In Russian. 3 refs.

Ocean currents, Icebergs, Ice water interface, Ice cover effect, Sea water, Water chemistry, Water temperature, Salinity, Surface structure, Surface properties, Drift stations, Antarctica—Weddell Sea

Iceberg studies were carried out during the Russian-American experiment in the Weddell Sea in 1992 (drift station Weddell-1). It was concluded that icebergs must be seen as an active element of the energy exchange in the ocean-air system in those regions where their concentration is the greatest. (Auth. mod.)

50-4203

Morphometry of bacterioplankton cells in the Barents Sea. [Morfometriia kletok bakterioplanktona Barentseva moria]

Baĭtaz, V.A., Baĭtaz, O.N., Mishustina, I.E., *Rossiĭskaia akademiia nauk. Doklady,* Aug. 1995, 343(6), p.727-730, In Russian. 11 refs.

Plankton, Bacteria, Marine biology, Microbiology, Barents Sea

50-4204

Big freeze digs a deeper hole in ozone layer.

Pearce, F., *New scientist,* Mar. 16, 1996, 149(1021), p.7.

Polar atmospheres, Stratosphere, Atmospheric composition, Ozone, Cooling, Climatic changes

50-4205

Hot ice could contaminate fish.

Edwards, R., *New scientist,* Mar. 2, 1996, 149(2019), p.7.

Ecology, Oceanography, Marine biology, Water pollution, Radioactive wastes, Icebergs, Drift, Environmental impact

50-4206

Trichloracetic acid in conifer needles and arboreal lichens in forest environments.

Juuti, S., Norokorpi, Y., Helle, T., Ruuskanen, J., *Science of the total environment,* Feb. 9, 1996, 180(2), p.117-124, 32 refs.

Forest ecosystems, Subarctic landscapes, Trees (plants), Air pollution, Aerosols, Hydrocarbons, Sedimentation, Degradation, Environmental impact, Plant tissues, Sampling, Chemical analysis

50-4207

Arsenic in subarctic lakes influenced by goldmine effluent: the occurrence of organoarsenicals and 'hidden' arsenic.

Bright, D.A., Dodd, M., Reimer, K.J., *Science of the total environment,* Feb. 9, 1996, 180(2), p.165-182, 31 refs.

Limnology, Hydrogeochemistry, Lake water, Mining, Waste disposal, Water pollution, Bottom sediment, Diagenesis, Microbiology, Sampling, Environmental tests

50-4208

Acoustic sounder measurements of the planetary boundary layer at Maitri, Antarctica.

Naithani, J., Dutta, H.N., *Boundary layer meteorology,* Oct. 1995, 76(1-2), p.199-207, 21 refs.

Polar atmospheres, Climatology, Synoptic meteorology, Sounding, Acoustic measurement, Turbulent boundary layer, Wind velocity, Stratification, Antarctica—Maitri Station

The planetary boundary layer (PBL) over the Indian antarctic station Maitri has been studied using a monostatic acoustic sounder. Acoustic sounder records reveal that the antarctic PBL remains stably stratified throughout the year except for some periods in the peak summer months. The summertime PBL exhibits a diurnal variation with ground-based inversions developing at night and convective plumes occurring during the peak sunlight hours. The cyclonic inflow of warm oceanic air towards the continent's interior from the coast helps in the development of the elevated layers and of the Kelvin-Helmholtz waves observed on the sodar records. (Auth. mod.)

50-4209

Role of air-sea heat fluxes in annual and interannual ocean temperature variability on the eastern Newfoundland Shelf.

Umoh, J.U., Loder, J.W., Petrie, B., *Atmosphere-ocean,* Sep. 1995, 33(3), p.531-568, With French summary. 41 refs.

Oceanography, Marine atmospheres, Climatology, Water temperature, Surface temperature, Temperature variations, Air ice water interaction, Heat flux, Ice cover effect, Seasonal variations, Mathematical models, Canada—Newfoundland

50-4210

Upward flushing of sea water through first year sea ice.

Hudier, E.J.J., Ingram, R.G., Shirasawa, K., *Atmosphere-ocean,* Sep. 1995, 33(3), p.569-580, With French summary. 15 refs.

Oceanography, Frazil ice, Ice water interface, Snow ice interface, Ice temperature, Ice structure, Ice bottom surface, Snow cover effect, Meltwater, Sea water, Brines, Salinity, Drainage, Sampling

50-4211

Cycling around the South Pole.

Yuan, X.J., Cane, M.A., Martinson, D.G., *Nature,* Apr. 25, 1996, 380(6576), p.673-674, 9 refs.

Atmospheric pressure, Air temperature, Water temperature, Sea ice

The authors provide an analysis of a paper concerning a recently discovered interannual Antarctic Circumpolar Wave, published in this same issue of *Nature.* They point out newly created avenues for research and some additional associations which could be made as a result of this discovery.

50-4212

Active cycling of organic carbon in the central Arctic Ocean.

Wheeler, P.A., et al, *Nature,* Apr. 25, 1996, 380(6576), p.697-699, 30 refs.

Biomass, Sea water, Water chemistry, Marine biology, Arctic Ocean

50-4213

Antarctic circumpolar wave in surface pressure, wind, temperature and sea-ice extent.

White, W.B., Peterson, R.G., *Nature,* Apr. 25, 1996, 380(6576), p.699-702, 22 refs.

Sea ice, Atmospheric pressure, Climatic changes, Ocean currents, Air temperature, Wind (meteorology)

The southern ocean is the only oceanic domain encircling the globe. It contains the strong eastward flow of the Antarctic Circumpolar Current and is the unifying link for exchanges of water masses at all depths between the world's major ocean basins. Interannual variability has been often observed at high southern latitudes, and observations of sea-ice extent suggest that such features propagate eastwards around the southern ocean. Here the authors use data from a variety of observational techniques to identify significant interannual variations in the atmospheric pressure at sea level, wind stress, sea surface temperature and sea-ice extent over the southern ocean. These anomalies propagate eastward with the circumpolar flow, with a period of 4-5 years and taking 8-10 years to encircle the pole. This system of coupled anomalies, named the Antarctic Circumpolar Wave, is likely to play an important role in climate regulation and dynamics both within and beyond the southern ocean. (Auth. mod.)

50-4214

Impingement of surface waves on the edge of compressed ice.

Bukatov, A.E., Zav'ialov, D.D., *Fluid dynamics,* Nov. 1995, 30(3), p.435-440, Translation of Izvestiia Rossiiskoi Akademii Nauk, Mekhanika zhidkosti i gaza, No.3, p.121-126, May-June, 1995. 15 refs.

Sea ice, Ice edge, Ocean waves, Mathematical models

50-4215

Effective permittivity microwave model for wet and frozen soils.

Boiarskiĭ, D.A., Tikhonov, V.V., *Journal of communications technology and electronics,* 1995, 40(9), p.51-54, Translation of Radiotekhnika i elektronika, No.6, 1995, p.914-917. 9 refs.

Refractivity, Microwaves, Models, Frozen ground

50-4216

South Pole wanders from the straight and narrow.

Kiernan, V., *New scientist,* Feb. 10, 1996, 149(2016), p.10.

Remote sensing, Ice creep, Geographic location

An explanation is given as to why the "true" south geographic pole markers had to be offset for 1995 and 1996: in 1995 and 1996 the south pole site was located by the Global Positioning System, a more accurate method than earlier measuring systems, which found the markers for those years somewhat out of alignment with the others. The ceremonial South Pole site remains as it was.

50-4217

Introductory analysis of boundary-layer development on de/anti-icing fluid.

Perron, E., Louchez, P.R., Laforte, J.L., *Journal of aircraft,* Feb. 1996, 33(1), p.74-80, 11 refs.

Aircraft, Performance, Liquid solid interfaces, Antifreezes, Fluid mechanics, Viscosity, Shear stress, Surface roughness, Rheology, Air flow, Turbulent boundary layer, Liquid solid interfaces, Simulation, Mathematical models

50-4218

Investigation into ice detection parameters for turboprop aircraft.

Render, P.M., Jenkinson, L.R., *Journal of aircraft,* Feb. 1996, 33(1), p.125-130, 3 refs.

Aircraft icing, Jet engines, Ice detection, Ice prevention, Ice removal, Sensors, Inflatable structures, Performance, Cost analysis, Design

50-4219

Cratering phenomena on aircraft anti-icing films.
La Due, J., Muller, M.R., Swangler, M., *Journal of aircraft*, Feb. 1996, 33(1), p.131-138, 25 refs.
Aircraft icing, Ground ice, Fluid mechanics, Antifreezes, Surfactants, Films, Interfacial tension, Surface structure, Snow pellets, Snow melting, Degradation, Simulation

50-4220

Evidence of a convective instability allowing warm water to freeze in less time than cold water.
Maciejewski, P.K., *Journal of heat transfer*, Feb. 1996, 118(1), p.65-72, 13 refs.
Water temperature, Temperature variations, Solidification, Freezing points, Convection, Liquid phases, Density (mass/volume), Buoyancy, Temperature measurement, Thermodynamics

50-4221

Conductivity effects on electromagnetic emissions (EME) from ice fracture.
O'Keefe, S.G., Thiel, D.V., *Journal of electrostatics*, Jan. 1996, 36(3), p.225-234, 8 refs.
Ice physics, Ice electrical properties, Static electricity, Salt ice, Ice breaking, Cracking (fracturing), Charge transfer, Wave propagation, Electrical measurement, Mechanical tests

50-4222

Characteristics of water quality in a forest river during the snow melting period.
Tachibana, H., Ohmori, H., Utosawa. K., *Journal of hydroscience and hydraulic engineering*. May 1994, 12(1), p.79-92, 7 refs.
Hydrogeochemistry, Rivers, Water chemistry, Snowmelt, Snow composition, Meltwater, Runoff, Nutrient cycle, Chemical analysis, Sampling, Seasonal variations

50-4223

Orientation dependence of elastic constants for ice.
Parameswaran, V.R., *Defense science journal*. July 1987, 37(3), p.367-375, 14 refs.
Ice mechanics, Ice strength, Ice crystal structure, Ice elasticity, Elastic properties, Shear properties, Orientation, Ice models, Rheology, Temperature effects, Mathematical models

50-4224

Vitamin C in the prevention and treatment of frostbite.
Purkayastha, S.S., Mathew, L., *Defence science journal*. Jan. 1992, 42(1), p.39-46, 23 refs.
Cold weather survival, Cold weather tests, Frostbite, Countermeasures, Physiological effects, Temperature effects, Acclimatization, Simulation

50-4225

Condition survey of prestressed concrete bridges.
Novokshchenov, V., *Concrete international*, Sep. 1989, 11(9), p.60-68, 10 refs.
Bridges, Icing, Winter maintenance, Ice removal, Salting, Runoff, Joints (junctions), Concrete structures, Concrete durability, Structural changes, Fatigue (materials), Corrosion, Mechanical tests

50-4226

Underground precast, prestressed concrete tanks.
Freas, G.C., *Concrete international*, Sep. 1991, 13(9), p.41-46, 5 refs.
Tanks (containers), Military facilities, Docks, Fuels, Storage tanks, Subsurface structures, Precast concretes, Concrete structures, Construction, Walls, Panels, Design, Strength, Specifications

50-4227

Wear resistant concrete for pavements.
Pedersen, N., *Concrete international*, Aug. 1988, 10(8), p.53-58, 8 refs.
Concrete pavements, Bituminous concretes, Road maintenance. Surface structure, Degradation, Concrete durability, Concrete aggregates, Mechanical properties, Tires, Loading, Damage, Simulation, Design criteria

50-4228

Concrete durability in Iceland.
Idorn, G.M., *Concrete international*, Nov. 1988, 10(11), p.41-43.
Concrete structures, Concrete durability, Cold weather performance, Concrete aggregates, Degradation, Countermeasures, Research projects, Iceland

50-4229

Protection against chloride-induced corrosion.
Berke, N.S., Pfeifer, D.W., Weil, T.G., *Concrete international*, Dec. 1988, 10(12), p.45-55, 15 refs.
Concrete structures, Reinforced concretes, Concrete aggregates, Physical properties, Permeability, Cold weather performance, Salting, Ice removal, Runoff, Corrosion, Degradation, Protection, Design criteria

50-4230

Flame spread over fuel-spilled and/or snow-covered asphalt road.
Ishida, H., Sato, K., Hokari, K., Hara, T., *Journal of fire sciences*, Jan.-Feb. 1996, 14(1), p.50-66, 7 refs.
Roads, Bituminous concretes, Fuels, Oil spills, Fires, Snow melting, Snow cover effect, Porosity, Saturation, Liquid solid interfaces, Mathematical models

50-4231

Impact of climate change on surface water resource and tendency in the future in the arid zone of northwestern China.
Shi, Y.F., Zhang, X.S., *Science in China*, Nov. 1995, 38(11), p.1395-1408, 23 refs.
Climatology, Global warming, Runoff forecasting, Surface waters, Water supply, Snow accumulation, Snowmelt, Glacier mass balance, Glacier ablation, Ice cores, Isotope analysis, China

50-4232

Reactivation history of the long-lived Billefjorden Fault Zone in north central Spitsbergen, Svalbard.
McCann, A.J., Dallmann, W.K., *Geological magazine*, Jan. 1996, 133(1), p.63-84, 56 refs.
Geological surveys, Tectonics, Pleistocene, Geologic structures, Mapping, Earth crust, Deformation, Stratigraphy, Norway—Spitsbergen

50-4233

Late Cenozoic antarctic paleoclimate reconstructed from volcanic ashes in the Dry Valleys region of southern Victoria Land.
Marchant, D.R., Denton, G.H., Swisher, C.C., III, Potter, N., Jr., *Geological Society of America. Bulletin*, Feb. 1996, 108(2), p.181-194, 77 refs.
Paleoclimatology, Geologic processes, Valleys, Geomorphology, Quaternary deposits, Sedimentation, Volcanic ash, Isotope analysis, Geochronology, Antarctica—Victoria Land
The purpose of this paper is to introduce a late Cenozoic paleoclimate record for the Dry Valleys region, Victoria Land (independent from interpretations of the marine-oxygen isotope record and the Sirius Group flora and fauna), that relies on laser-fusion $^{40}Ar/^{39}Ar$ analyses of *in situ* ash deposits which occur in sand wedges on ventifact pavements, and in avalanche deposits in the Dry Valleys region.

50-4234

Landscape damage by skiing at the Schauinsland in the Black Forest, Germany.
Ries, J.B., *Mountain research and development*, Feb. 1996, 16(1), p.27-40, 7 refs.
Alpine landscapes, Skis, Geomorphology, Mountain soils, Soil erosion, Damage, Classifications, Snow depth, Snow accumulation, Snow cover effect, Environmental impact, Mapping, Germany—Schauinsland

50-4235

Physical climatology of alpine tundra, Scout Mountain, British Columbia, Canada.
Saunders, I.R., Bailey, W.G., *Mountain research and development*, Feb. 1996, 16(1), p.51-64, 48 refs.
Climatology, Alpine landscapes, Tundra climate, Tundra soils, Desiccation, Insolation, Surface energy, Heat flux, Radiation balance, Snow cover effect, Cloud cover, Radiometry, Canada—British Columbia—Scout Mountain

50-4236

1994 Lugge Tsho glacial lake outburst flood, Bhutan Himalaya.
Watanabe, T., Rothacher, D., *Mountain research and development*, Feb. 1996, 16(1), p.77-81, 21 refs.
Glacial hydrology, Alpine landscapes, Lake bursts, Glacial lakes, Flooding, Damage, Nepal—Bhutan

50-4237

Development of a hydrochemical model for seasonally snow-covered alpine watersheds: application to Emerald Lake watershed, Sierra Nevada, California.
Wolford, R.A., Bales, R.C., Sorooshian, S., *Water resources research*, Apr. 1996, 32(4), p.1061-1074, 51 refs.
Alpine landscapes, Watersheds, Surface drainage, Snow hydrology, Snow cover effect, Hydrogeochemistry, Snowmelt, Water transport, Ion diffusion, Mathematical models, Simulation, United States—Colorado—Emerald Lake

50-4238

Record low ozone measured at McMurdo Station, Antarctica, during the austral spring of 1993.
Johnson, B.J., Deshler, T., *Antarctic journal of the United States*, 1994, 29(5), p.249-251, 6 refs.
Ozone, Aerosols, Clouds (meteorology), Stratosphere, Air temperature, Antarctica—McMurdo Station
Forty vertical profiles of ozone were measured at McMurdo Station from Aug. 23 to Oct. 30, 1993. In addition, three condensation nuclei and seven aerosol profiles were measured. The pre-depletion profile was measured on Aug. 30 when total ozone was 275 Dobson units (DU). Ozone declined at a relatively linear rate during Sep., reaching a record low 130 DU by Oct. 2, a 55% loss. Data are given on the profile of Oct. 19 when the main ozone layer between 12 and 20 km dropped to a record low 7 DU. Another figure shows the aerosol profiles measured on Sep. 6 for particles in the size range of 0.12 to 0.75 μm radius. It is suggested that much of the stratosphere may have been depleted of nitric acid and water vapor from the formation and settling out of PSCs earlier in the season.

50-4239

Polar stratospheric clouds observed by lidar at McMurdo Station during the 1993 winter.
Adriani, A., Gobbi, G.P., Di Donfrancesco, G., *Antarctic journal of the United States*, 1994, 29(5), p.251-252, 3 refs.
Clouds (meteorology), Stratosphere, Air temperature, Atmospheric composition, Ozone, Meteorological instruments, Antarctica—McMurdo Station
Since 1990, a lidar system has been operating at McMurdo Station during the local spring. In 1993 it performed measurements between Mar. 1 and Oct. 10. During the 1993 winter and spring, the antarctic stratosphere still presented a measurable amount of volcanic aerosol from the Mount Pinatubo eruption. A figure shows the temperature field at different altitudes vs. time over McMurdo Station between Apr. 1 and Oct. 10, 1993; lidar measurements up to 40 km were added to complete the temperature field. The lidar is able to monitor the atmospheric temperature from 25 to 60 km; however, only the measurements concerning the presence of PSCs are discussed here.

50-4240

Measurement of stratospheric trace gases by millimeter-wave spectroscopy for an annual cycle at the South Pole.
De Zafra, R.L., Trimble, C., Reeves, M., Cheng, D.J., Shindell, D.T., *Antarctic journal of the United States*, 1994, 29(5), p.253-254, 7 refs.
Stratosphere, Atmospheric composition, Ozone, Meteorological instruments, Antarctica—Amundsen-Scott Station
Chemistry and transport processes in the south polar stratosphere have been intensively studied since discovery of the seasonal ozone hole over Antarctica. Nevertheless, large gaps still exist in the knowledge of the dynamical and chemical behavior of the polar winter vortex. The work described here was intended to fill some of these gaps by frequently monitoring the behavior of several trace gases over as much of a full year cycle as possible, from a central position within the annually forming winter vortex region. Trace gas experiments carried out at the Amundsen-Scott Station on an almost daily basis from Feb. 5, 1993 until Jan. 10, 1994 are described.

50-4241

Ultraviolet radiation in the southern seas in early spring 1993.
Wendler, G., Quakenbush, T., *Antarctic journal of the United States*, 1994, 29(5), p.254-256, 2 refs.
Snow, Sea ice, Clouds (meteorology), Ultraviolet radiation, Ozone, Antarctica—Antarctic Peninsula, Antarctica—Bellingshausen Sea

The National Science Foundation research vessel *Nathaniel B. Palmer* carried out a cruise to Antarctica in early spring of 1993. It left Punta Arenas on Aug. 11, 1993, sailed south for 3 days to the tip of the Antarctic Peninsula, stopping at O'Higgins and Palmer Stations, and from there went southwest and into the Bellingshausen Sea. On Sep. 10, it reached the most southerly position, 71°S, some distance north of the Thurston I. The main purpose of the cruise was to investigate the snow- and sea-ice thickness, properties, and structures in this part of the southern ocean and carry out continuous radiation measurements. The radiative levels changed substantially during the trip, as both latitude and season changed. The mean value of the clearness index K_t (total transmissivity) was found to be 0.44. This is a low value, but the cloudiness was high (mean value 78%); the ultraviolet-A and ultraviolet-B radiation were related to the global radiation. Correlation coefficients increased substantially when the relationship was investigated for different cloudiness classes; the ozone concentration during the trip varied between 160 to 290 DU (Dobson units); and the ultraviolet-B radiation more than dobuled when the ship entered the "antarctic ozone hole," whereas the ultraviolet-A radiation was hardly affected.

50-4242

High-resolution ultraviolet spectral irradiance monitoring program in polar regions: nearly a decade of data available to polar researchers in ozone and ultraviolet-related studies.

Booth, C.R., Lucas, T.B., Mestechkina, T., Tusson, J., IV, *Antarctic journal of the United States,* 1994, 29(5), p.256-259, Refs. p.258-259.

Ozone, Ultraviolet radiation, Weather stations, Meteorological instruments, Research projects, Data processing

The Antarctic Ultraviolet Spectroradiometer Monitoring Network was established by the U.S. National Science Foundation (NSF) in 1988 in response to predictions of increased ultraviolet (UV) radiation in the polar regions. It is the first automated, high-resolution UV scanning spectroradiometer network installed in the world. The network consists of five automated, high-resolution spectroradiometers, placed in strategic locations in Antarctica and the Arctic, and one established in San Diego, to collect data and serve as a training and testing facility. The network, which makes measurements of UV spectral irradiance, has been successfully operated in the harshest environments of Antarctica and the Arctic. It is currently returning data to researchers studying the effects of ozone depletion on terrestrial and marine biological systems, as well as being used to develop and verify models of atmospheric light transmission.

50-4243

Effects of solar ultraviolet radiation on antarctic phytoplankton during springtime ozone depletion.

Villafañe, V.E., Helbling, E.W., Holm-Hansen, O., Sala, L., *Antarctic journal of the United States,* 1994, 29(5), p.259-262, 10 refs.

Ozone, Ultraviolet radiation, Plankton, Photosynthesis, Marine biology, Antarctica—Palmer Station

In this paper, the authors are concerned with describing the impact of "normal" ultraviolet radiation (UVR), as well as enhanced UV-B radiation, on natural assemblages of phytoplankton as well as on just the nanoplankton fraction and the microplankton fraction. The studies also included estimation of the impact of UVR as influenced by the taxonomic composition of the phytoplankton and the mitigating effect of cellular UV-absorbing compounds. All studies were carried out at Palmer Station from early Oct. to the end of Dec. 1993. The ozone hole was very well developed over Palmer Station in the month of Oct; column ozone concentrations ranged from 140 to 220 Dobson units.

50-4244

Spectral measurements of ultraviolet and visible solar irradiance at the Weddell-Scotia Confluence during 1993 austral spring.

Sikorski, R.J., Sigleo, A.C., Neale, P.J., *Antarctic journal of the United States,* 1994, 29(5), p.270-272, 2 refs.

Ultraviolet radiation, Ozone, Clouds (meteorology), Sunlight, Optical properties, Sea water, Hydrology, Antarctica—Weddell Sea, —Scotia Sea

Spectral measurements were made of incident and undersea solar irradiance in the Oct. and Nov. 1993 austral spring, during transits of a low ozone "hole" over the Weddell-Scotia Confluence. Meteorological data, hydrologic data, and ship pitch-and-roll data also were collected. TOMS satellite imagery indicated that the region of low atmospheric ozone concentrations, the austral spring ozone hole over the Antarctic, rotated and oscillated during the time of this research cruise. The 304-nm/344-nm ratio varied smoothly with the diel change in optical path length through the atmosphere, and the ratio was not greatly perturbed by changes in cloud cover. On the other hand, irradiance at 344 nm was strongly affected by changing cloud cover, and the maximum daily value varied from 10 to 45 microwatts/cm^2/nm.

50-4245

***Icecolors '93:* Biological weighting function for the ultraviolet inhibition of carbon fixation in a natural antarctic phytoplankton community.**

Boucher, N., et al, *Antarctic journal of the United States,* 1994, 29(5), p.272-275, 18 refs.

Plankton, Biomass, Marine biology, Ozone, Stratosphere, Ultraviolet radiation, Antarctica—Palmer Station

This study was conducted at Palmer Station prior to the opening of the ozone "hole" and during the onset of depletion, onboard the R/V *Polar Duke* along the Antarctic Peninsula for the remainder of the austral spring. In 1993 the ozone hole developed in early Aug. and did not close before late Dec. It was the most severe depletion ever recorded over the Antarctic Peninsula. The authors introduce the results from an experiment designed to estimate a biological weighting function for primary production inhibition in antarctic phytoplankton under natural irradiance. They present the newly derived function and show that the sensitivity of *in situ* antarctic phytoplankton to ambient UV-B (280-320 nm) at the end of the winter was greater than that measured under artificial light conditions for temperate marine phytoplankton and terrestrial plants.

50-4246

***Icecolors '93:* Beginnings of an antarctic phytoplankton and bacterial DNA library from southern ocean natural communities exposed to ultraviolet-B.**

Jovine, R.V.M., Prézelin, B.B., *Antarctic journal of the United States,* 1994, 29(5), p.277-279, 7 refs.

Plankton, Damage, Marine biology, Microbiology, Ozone, Ultraviolet radiation, Antarctica—Arthur Harbor

Springtime ozone depletion and the resultant increase in ultraviolet-B (UV-B) radiation (280-320 nm) have deleterious effects on primary productivity. To assess damage to cellular components other than the photosynthetic apparatus, the authors isolated total community DNA from samples in the field before, during, and after the 1993 springtime depletion in stratospheric ozone. They collected 17 bacterial and 70 discrete phytoplankton samples under pack ice, from open surface waters, or from frazil ice in Arthur Harbor. Preliminary analysis of the phytoplankton UV-B induced photoproducts indicates for the first time that DNA damage in natural phytoplankton communities is evident even before julian day 250, in spite of all the factors that may reduce the impact or exposure to UV-B. Microsporinelike amino acids (MAAs), mixing water masses, and pack ice confer only partial protection from UV-B. Some samples collected early in the morning before sunrise still retained significant amounts of photodamage from the previous day.

50-4247

Doppler radar for continuous remote measurement of river ice velocity.

Ferrick, M.G., Yankielun, N.E., Nelson, D.F., CR 95-21, *U.S. Army Cold Regions Research and Engineering Laboratory. Report,* Nov. 1995, 11p., ADA-305 808, 12 refs.

River ice, Ice mechanics, Ice floes, Ice breakup, Frazil ice, Velocity measurement, Accuracy, Radar, United States—Connecticut River

River ice velocity measurements are fundamental to analyses of river ice dynamics. Ice velocity measurement with a continuous-wave Doppler radar system having real-time data acquisition and digital signal processing capability was evaluated during a river breakup and a frazil run on the Connecticut River. This system can be rapidly deployed, requires minimal operator interaction, will continuously acquire, process, store, and display ice velocity data and does not depend on visibility conditions. In parallel, video records of ice motion were obtained at the same location for later manual processing and comparison with the radar results. The authors describe the Doppler radar system and obtain bounding estimates of possible measurement errors. The principal error in Doppler ice velocity measurement is due to the beamwidth of the radar antenna, and an analytical method is developed to minimize this error. Measured ice velocities ranged from 1 to 25 m/s during the river breakup and from 0.5 to 0.65 m/s in the frazil run.

50-4248

Sea ice in the global climate system: requirements for an ocean observing system.

Allison, I., Moritz, R.E., Texas A&M University. Ocean Observing System Development Panel. Background report No.7, College Station, Apr. 1995, 28p., 81 refs.

DLC GB2401.72.R42 A38

Climatology, Global change, Geophysical surveys, Ice surveys, Remote sensing, Ice conditions, Sea ice distribution, Ice cover thickness, Remote sensing, Air ice water interaction, Ice cover effect, Climatic factors

Focusing on both arctic and antarctic regions, this study examines the effects of sea ice distribution and thickness on climatic variations, with emphasis on the acquisition of ice condition data from remote sensing modalities including drift buoys and satellites. The influence of variations in sea ice parameters on global climatic change and forecasting is emphasized, and the description and implementation of the relevant sensor instruments is discussed.

50-4249

Thermal rejuvenation of the Yermak Plateau.

Okay, N., Crane, K., *Marine geophysical researches,* Nov. 1994, 15(4), p.243-263, 45 refs.

Marine geology, Geophysical surveys, Continental drift, Ocean bottom, Earth crust, Tectonics, Heat flux, Shear stress, Greenland Sea

50-4250

Interference fringes on GLORIA side-scan sonar images from the Bering Sea and their implications.

Huggett, Q.J., Cooper, A.K., Somers, M.L., Stubbs, A.R., *Marine geophysical researches,* Feb. 1992, 14(1), p.47-63, 15 refs.

Oceanography, Geophysical surveys, Ocean bottom, Bottom sediment, Subsurface structures, Acoustic measurement, Underwater acoustics, Wave propagation, Attenuation, Imaging, Bering Sea

50-4251

Ice jam flooding and mitigation: Lower Platte River basin, Nebraska.

White, K.D., Kay, R.L., SR 96-01, *U.S. Army Cold Regions Research and Engineering Laboratory. Special report,* Jan. 1996, 86p., ADA-305 756, 40 refs.

Ice jams, Flooding, River ice, Countermeasures, Freezeup, Data processing, Ice breakup, Dusting, Ice models, River flow, United States—Nebraska—Platte River

This report presents the results of the Corps of Engineers' Section 22 study of ice jam flooding in the Lower Platte River basin. The purpose of the study was to gather and analyze historical data relating to ice jams, with the intent of developing guidance that can be used to alleviate ice jam flooding at seven sites within the study area. Ice event and related information is summarized for each site. Ice event characteristics for the study area are identified and analyzed. A model for predicting the occurrence of ice jams or other ice events within the study area was developed based on data for the Platte River at North Bend, NE. The model provides the minimum discharge associated with ice events for a given date, assuming a threshold value of accumulated freezing degree-days has been reached. A data collection program for future field observations was developed and placed in operation during the winter of 1993-94. General information on ice jam mitigation measures, as well as specific information on such operations as dusting and blasting, is provided. Specific recommendations include increased monitoring of ice conditions, installation of ice motion detectors and water stage recorders, and further study of nonstructural and structural mitigation measures.

50-4252

Antagonism between cloud point and cold filter plugging point depressants in a diesel fuel.

Létoffé, J.M., Claudy, P., Vassilakis, D., Damin, B., *Fuel,* Dec. 1995, 74(12), p.1830-1833, 3 refs.

Fuels, Solidification, Fuel additives, Polymers, Liquid cooling, Thermal properties, Low temperature tests, Chemical properties, Temperature effects, Temperature measurement

50-4253

Micro-scale patterns of modern pollen deposition within three alpine plant communities.

Pardoe, H.S., *New phytologist,* Feb. 1996, 132(2), p.327-341, 51 refs.

Plant ecology, Vegetation patterns, Alpine landscapes, Palynology, Mosses, Sampling, Spectra, Classifications, Correlation, Biogeography, Statistical analysis

50-4254

Late-glacial and early Holocene vegetation of Snowdonia.

Ince, J., *New phytologist,* Feb. 1996, 132(2), p.343-353, 36 refs.

Paleoecology, Paleoclimatology, Pleistocene, Lacustrine deposits, Organic soils, Stratigraphy, Palynology, Vegetation patterns, Climatic changes, Sampling

50-4255

Oscillations in polar mesospheric summer echoes and bifurcation of noctilucent cloud formation.

Sugiyama, T., Muraoka, Y., Sogawa, H., Fukao, S., *Geophysical research letters,* Mar. 15, 1996, 23(6), p.653-656, 20 refs.

Polar atmospheres, Cloud physics, Atmospheric composition, Aerosols, Condensation nuclei, Ice crystal growth, Heterogeneous nucleation, Periodic variations, Radar echoes, Spectra

50-4256

O_2 on Ganymede: spectral characteristics and plasma formation mechanisms.

Calvin, W.M., Johnson, R.E., Spencer, J.R., *Geophysical research letters,* Mar. 15, 1996, 23(6), p.673-676, 30 refs.

Satellites (natural), Extraterrestrial ice, Ice physics, Regolith, Ice composition, Chemical composition, Oxygen, Radiation absorption, Ion diffusion, Spectra, Photochemical reactions

50-4257

State of SO_2 on Io's surface.

Kerton, C.R., Fanale, F.P., Salvail, J.R., *Journal of geophysical research,* Mar. 25, 1996, 101(E3), p.7555-7563, 30 refs.

Satellites (natural), Extraterrestrial ice, Atmospheric physics, Surface temperature, Frost, Vapor diffusion, Ice sublimation, Ice cover effect, Regolith, Surface properties, Latent heat, Mathematical models

50-4258

Dual polarization radar observations of thunderclouds in winter season.

Sonoi, Y., Maekawa, Y., Kawasaki, Z.I., Yoshino, F., Fukao, S., *Journal of geomagnetism and geoelectricity,* 1995, 47(10), p.999-1010, 17 refs.

Clouds (meteorology), Precipitation (meteorology), Thunderstorms, Lightning, Cloud physics, Electric fields, Cloud electrification, Snow pellets, Ice crystals, Polarization (charge separation), Detection, Remote sensing, Radar echoes

50-4259

Rapid test for the determination of frost susceptibility of soils.

Leary, R.M., FCP Research Review Conference, Atlanta, GA, Oct. 1977, Atlanta, 1977, 8p. + appends., 14 refs.

Roadbeds, Design criteria, Soil freezing, Frost heave, Simulation, Soil tests, Standards, Soil composition, Ice water interface, Soil water migration, Laboratory techniques

50-4260

Stability criteria in avalanche hazard forecasting.

Perla, R.I., Conference on Snow and Ice, Calgary, Alberta, Canada, Oct. 23-24, 1969, Calgary, University of Calgary, Oct. 1969, 12p. + appends., 14 refs.

Avalanche forecasting, Avalanche mechanics, Avalanche formation, Meteorological data, Wind factors, Snow cover stability, Classifications, Accuracy, Standards

50-4261

ALOMAR—a new facility for middle atmosphere research at arctic latitudes.

Thrane, E.V., von Zahn, U., *Journal of geomagnetism and geoelectricity,* 1995, 47(9), p.921-928, 3 refs.

Climatology, Atmospheric physics, Atmospheric composition, Remote sensing, Stations, Research projects, Lidar, Radar echoes, Ozone, Aerosols, Photochemical reactions, Environmental tests, Norway—Andøya

50-4262

Studies of the polar middle and lower atmosphere by an MST radar on Svalbard.

Röttger, J., Tsuda, T., *Journal of geomagnetism and geoelectricity,* 1995, 47(9), p.929-942, 57 refs.

Atmospheric physics, Polar atmospheres, Atmospheric composition, Cloud physics, Remote sensing, Radar echoes, Gravity waves, Norway—Svalbard

50-4263

Greenland '90: a first step toward using the polar ice cap as a Cherenkov detector.

Barwick, S.W., et al, International Trends in Astrophysical Particle Physics Conference, 1st, Santa Monica, CA, Nov. 1990. Contributions, Singapore, World Scientific Publishing Co., 9204, p.413-417, 12 refs.

DLC QB463.T74

Ice sheets, Ice cores, Ice physics, Ice optics, Light transmission, Transparence, Gamma irradiation, Neutron irradiation, Detection, Attenuation, Greenland

50-4264

***Arthroderma silverae* sp. nov. and *Chysosporium vallenarense*, keratinophilic fungi from arctic and montane habitats.**

Currah, R.S., Abbott, S.P., Sigler, L., *Mycological research,* Feb. 1996, 100(pt.2), p.195-198, 10 refs.

Plant ecology, Fungi, Classifications, Distribution, Biomass, Sampling, Structural analysis, Scanning electron microscopy

50-4265

Operation manual for freezing soil heave stress unit, or when all else fails, read the directions.

Martin, R.T., Massachusetts Institute of Technology. Department of Civil Engineering. Research report R74-19; Soils publication No.338, Boston, Apr. 1974, 44p.

Soil tests, Geocryology, Soil freezing, Loading, Frost heave, Stresses, Frozen ground expansion, Test equipment, Portable equipment, Design, Temperature measurement

50-4266

Precipitation, snow conditions and air temperature in Austria in the period 1981-1990. [Die Niederschläge, Schneeverhältnisse und Lufttemperaturen in Österreich im Zeitraum 1981-1990], Hydrographischer Dienst in Österreich. Beitrage zur Hydrographie Österreichs, Heft Nr. 52, Vienna, Hydrographisches Zentralbüro, 1994, 529p., In German.

DLC GB725.A4 Nr.52

Precipitation (meteorology), Air temperature, Snow depth, Snowfall, Austria

50-4267

Proceedings.

Symposium on Antarctic Logistics and Operations, 6th, Rome, Italy, Aug. 29-31, 1994, [1994], 352p., Refs. passim. For individual papers see A-54877, A-54878, G-54864 through G-54867, G-54869 through G-54874, G-54881 through G-54885, H-54875, H-54876, H-54879, H-54880, I-54887, J-54868, J-54886 or 50-4268 through 50-4285.

Low temperature research, Logistics, Waste disposal, Environmental protection, Heating, Fuels, Transportation, Meteorology

This is a collection of 25 papers presented at the 6th Symposium on Antarctic Logistics and Operations, held Aug. 29-31, 1994 in Rome, Italy. The Symposium was conducted by the Standing Committee on Antarctic Logistics and Operations (SCALOP) of the Council of Managers of Antarctic Programs (COMNAP) in conjunction with the XXIII Meeting of the Scientific Committee on Antarctic Research (SCAR). The themes for the 6th Symposium were: use of alternative energies; environmental protection related to operational technologies; selection and management of antarctic personnel; and new developments in operations, logistics and science support.

50-4268

Development of a mobile garage/vehicle servicing facility, Halley scientific station.

Smith, A.L., Harley, D.K., Symposium on Antarctic Logistics and Operations, 6th, Rome, Italy, 1994. Proceedings, [1994], p.1-11.

Tracked vehicles, Maintenance, Design, Cold weather construction, Construction materials, Equipment, Site surveys, Antarctica—Halley Station

To support scientific operations at the British Antarctic Survey's (BAS) Halley Station on the Brunt Ice Shelf, extensive use is made of tracked vehicles. This reliance brings with it a requirement for a major facility for front line servicing and maintenance. Traditionally the requirement has been met by the provision of a surface structure which has been allowed to become buried, access to the garage being via an inclined tunnel. With the development of the 5th Halley Station and the move away from sub-surface structures in favor of a surface facility elevated on 5 m high jackable platforms, the provision of a vehicle maintenance facility had to be addressed. After a rigorous appraisal of options, a re-locatable above-surface garage/vehicle servicing facility was selected. A feasibility study was completed and a detailed performance specification prepared for the mobile garage. This resulted in a structure of sizable proportions which, when fully equipped, weighs in the region of 50 to 55 tonnes. This unit was erected on site during the summer of 1992-93. The fully self-contained facility was used extensively during the following winter and has performed well.

50-4269

Waste management concept at the German winter station Neumayer.

El Naggar, S., Schoppe, S., Symposium on Antarctic Logistics and Operations, 6th, Rome, Italy, 1994. Proceedings, [1994], p.13-23.

Waste disposal, Environmental protection, Stations, Diesel engines, Antarctica—Georg von Neumayer Station

The waste management concept at the German winter station Neumayer is discussed, showing how the requirements and recommendations of the Protocol on Environmental Protection to the Antarctic Treaty have been adopted and how they have been realized. First, the Protocol on Environmental Protection is reviewed, then the Neumayer Station is described. Details of the cleaning measures carried out before, during and after the season are given.

50-4270

Potential for integrated waste management in the United States Antarctic Program as a model.

Juergens, E.D., Symposium on Antarctic Logistics and Operations, 6th, Rome, Italy, 1994. Proceedings, [1994], p.25-41.

Waste disposal, Environmental protection, Research projects

The United States Antarctic Program (USAP) approach to waste management has recently been challenged by logistical limitations, new environmental regulations, and a renewed commitment to environmental protection. Responding to these challenges, the USAP developed one of the most aggressive waste management programs in the world. Concurrent with developing the practical aspects of this program, the USAP began to gain unique insight into the weaknesses and flaws common to most U.S. based waste management programs. Unlike the U.S. programs, the USAP has realized that effective waste management must be founded on the principal of self-sufficiency. This understanding drives the fundamentals of the USAP waste management program and is the foundation of the model concept.

50-4271

Clean-up programme of stations of the Alfred Wegener Institute.

Kohnen, H., Symposium on Antarctic Logistics and Operations, 6th, Rome, Italy, 1994. Proceedings, [1994], p.43-48.

Waste disposal, Research projects, Environmental protection, Stations, Antarctica—Georg von Neumayer Station

Abandoned antarctic stations have to be dismantled and removed, as long as the removal does not create a greater environmental impact than leaving the structures in place and the station is not designated a historical site. The Alfred Wegener Institute is faced with the clean-up of four stations. These include the winter station "Georg von Neumayer", abandoned in 1992 after 11 years of operations and the winter station "Georg Forster" which came under the responsibility of the Alfred Wegener Institute after the reunification of Germany; its winter operations ceased in spring 1993. Also closed are the Drescher Summer Station, which used to be a focal point of biological summer activities for penguin research and is situated at an inlet on the Riiser Larsen Ice Shelf, and two huts on Ardley I., which served until now as a base for penguin studies. The clean-up program is discussed in chronological order of the various tasks.

50-4272

Operation for the removal of hydrocarbons from the wreck of the Argentine polar ship A.R.A. *Bahía Paraíso.*

Arangio, I.A., Symposium on Antarctic Logistics and Operations, 6th, Rome, Italy, 1994. Proceedings, [1994], p.49-64.

Oil spills, Hydrocarbons, Ocean environments, Waste disposal, Equipment, Antarctica—Arthur Harbor

A chronological account is given of the Argentine Navy operation for hydrocarbon removal from the *Bahía Paraíso,* including background information, statistics, and activities before, during and after the operation. Thirty-five conclusions are listed, the last stating that "the wreck of Argentine Navy polar ship *Bahía Paraíso* is now clean."

50-4273

Fuel and oil usage in Antarctica.

Sayers, J., Symposium on Antarctic Logistics and Operations, 6th, Rome, Italy, 1994. Proceedings, [1994], p.66-79.

Fuel transport, Petroleum transportation, Research projects, Waste disposal

Three surveys have been conducted during the last 8 years to collect information on the quantities and types of fuels and oils used by national antarctic programs in Antarctica. The surveys were as follows: 1987-88 SCAR survey of fuels and oils used by national antarctic programs; a 1990-91 COMNAP survey of the typical maximum quantities of fuels and oils carried on the vessels of national antarctic operators; and a 1992-93 SCALOP survey of the typical maximum quantities of fuels and oils carried on the vessels of national antarctic operators and tourist ships. The objectives and principal findings of each of the three surveys are described. The SCAR survey had different objectives from the latter two and consequently the data collected do not permit a comparison of trends over the period. Nevertheless, the three surveys together provide a general picture of the quantities and usage of fuels in the Antarctic Treaty area.

50-4274

Towards new energy systems for antarctic stations.

Guichard, A., Symposium on Antarctic Logistics and Operations, 6th, Rome, Italy, 1994. Proceedings, [1994], p.81-95, With French summary. 24 refs.

Research projects, Stations, Fuels, Electric power, Wind power generation, Hydrogen, Equipment

Technologies for cleaner, renewable energy production and energy storage are rapidly evolving and new, realistic options for alternative energy systems for antarctic stations can now be considered. This paper, which originates from a co-ordinated French-Australian project, presents a review of the main station energy supply issues and a schematic presentation of selected power generation technologies and system integration options. It provides an opportunity to refocus the orientation of the project and to motivate a move towards new energy systems for antarctic stations. (Auth.)

50-4275

Producing energy for polar stations from the wind-water temperature gradient.

LeGoff, H., Hasert, U.F., Guichard, A., Symposium on Antarctic Logistics and Operations, 6th, Rome, Italy, 1994. Proceedings, [1994], p.97-105, With German and French summaries. 10 refs.

Heat sources, Electric power, Fuels, Equipment, Wind power generation, Stations, Solar radiation, Antarctica—Dumont d'Urville Station

The renewable resources available to produce heating and electrical power for polar stations in complement of conventional fossil fuels are reviewed. For one antarctic site (Dumont d'Urville) characterized by a standard meteorological year, the authors compare the energetic potential for solar kinetic and thermal wind sources. The exergetic productions (i.e. usable heat or mechanical/electrical power) achieved by real and optimized systems (PVs, wind generators, heat pumps, thermodynamic cycles) are compared for the site. The energy produced from the thermal dipole of the cold polar wind and the "warm" sea-, lake- or waste-water is described more precisely, as are the principles of possible combined systems (heat transformers and thermodynamical cycles). Their efficiency is assessed, computed with typical weather data for two stations: Dumont d'Urville and Krenkel, Franz Josef Land. Two experiments currently under way at both test sites consist in monitoring during two years the cooling power of the wind and in testing the heat exchangers designed to recover this kind of energy. The two experimental set-ups are described and first experimental results are presented. (Auth.)

50-4276

Activity of Russian Committee on Antarctic Research on alternative energy sources utilization in the Antarctic.

Sheĭnsteĭn, A.S., Symposium on Antarctic Logistics and Operations, 6th, Rome, Italy, 1994. Proceedings, [1994], p.107-114, 12 refs.

Heat sources, Fuels, Electric power, Wind power generation, Solar radiation, Research projects, Stations, Waste disposal, Antarctica—Vostok Station

Preliminary results of investigations carried out by Russian organizations and institutions have shown economical and ecological advantages in windmill and solar-energy-system utilization in Antarctica. A series of experimental investigations of solar heating and photovoltaic installations have been carried out at Novolazarevskaya and Molodezhnaya stations. The results of these experiments are discussed. The paper also deals with a feasibility study of hybrid power system utilization for the conditions of Vostok and Bunger Oasis stations. (Auth. mod.)

50-4277

Alternative energy at the SAB (BAE) "Juan Carlos I".

Castellvi, J., Meana, E., Castejón, A., Symposium on Antarctic Logistics and Operations, 6th, Rome, Italy, 1994. Proceedings, [1994], p.115-121.

Wind power generation, Equipment, Electric power, Weather stations, Antarctica—Juan Carlos I Station

Experiments carried out with eolian energy since 1992 at the Juan Carlos I Station are mainly focused towards having an available power supply during the periods when the station is closed. During the 1992-93 campaign, two wind power generators with horizontal axis were installed, providing 3 phase a-c output of 500w, 48v. This installation obtained results during the months of Jan. and Feb. 1993 and subsequent seasons, which are described.

50-4278

Antarctic alternative energy summary.

Chiang, E., U.S. National Science Foundation. Office of Polar Programs, Symposium on Antarctic Logistics and Operations, 6th, Rome, Italy, 1994. Proceedings, [1994], p.123-138.

Research projects, Buildings, Equipment, Weather stations, Electric power, Telecommunication, Antarctica—Black Island

This summary provides the following information: the United States Antarctic Program's objectives and renewable energy innovation activities; the Black Island Telecommunication Facility (BITF) location and environment; the BITF capabilities, its hybrid power system design requirements, site plan, power and equipment building, berthing building and PV arrangements; the Black I. hybrid power system block diagram and architecture; the BITF graphical computer based interface; the BITF energy production summary, with typical summer (Feb.) and typical winter (June) daily data; and five conclusions.

50-4279

Concept of the cooperative air transport system in East Antarctica.

Klokov, V., Lukin, V., Symposium on Antarctic Logistics and Operations, 6th, Rome, Italy, 1994. Proceedings, [1994], p.243-263.

Transportation, International cooperation, Aircraft, Aircraft landing areas, Ice runways, —South Atlantic Ocean

This paper briefly describes the main components of the local cooperative air network for the Atlantic sector of Antarctica. The main aim is to show that it is now technically feasible to establish a permanent air bridge between Africa and Antarctica, using conventional wheeled aircraft and tested methods of constructing hard runways on the ice. Data are presented which show that the internal link between stations can be provided by heavy duty helicopters.

50-4280

Diversity of modern antarctic vessels.

Mäkinen, E., Arpiainen, M., Heideman, T., Symposium on Antarctic Logistics and Operations, 6th, Rome, Italy, 1994. Proceedings, [1994], p.265-290.

Oceanographic ships, Construction, Design, Cargo, Equipment, Icebreakers, Engines, Marine transportation

Logistics support and ocean research are the primary functions of typical antarctic vessels. Icebreaking capability is essential. This paper is divided in two parts; the first covers the description of six vessels, the design and/or construction of which Kvaerner Masa-Yards Inc. has been involved in. The second part covers a philosophical discussion on technical/operational requirements of future antarctic vessels and a generic concept of a future antarctic vessel optimized for desired technical functions and minimum costs.

50-4281

Automatic integrated module installed at Terra Nova Bay.

Lori, A., Symposium on Antarctic Logistics and Operations, 6th, Rome, Italy, 1994. Proceedings, [1994], p.291-306.

Research projects, Modular construction, Tanks (containers), Electric power, Computers, Data transmission, Antarctica—Terra Nova Bay Station

This paper describes the status after three years of operation of an automatic platform installed at Terra Nova Bay Station during the 6th Italian expedition to Antarctica. The platform consists of two 20' standard containers and one fuel tank in a 20' standard frame. One of the containers houses the complete power generation; the other houses a central Mvax 3800 computer and additional equipment for data transmission and acquisition. The automatic platform provides the following: availability of 6 kw of electrical power (220 V AC, 50 Hz) for about one year of continuous operation; automatic data acquisition; satellite link for data transmission and telecontrol; and data transmission via HF radio. (Auth.)

50-4282

Project of a regional HF high speed network among Terra Nova Bay, Dumont d'Urville and Dome C, with fax data video, voice facility.

Blasi, L., De Simone, M., Symposium on Antarctic Logistics and Operations, 6th, Rome, Italy, 1994. Proceedings, [1994], p.309-319.

Research projects, International cooperation, Data transmission, Computers, Telecommunication, Radio communication, Antarctica—Terra Nova Bay Station, Antarctica—Dumont d'Urville Station

The aim of this document is to describe the attempts to program a regional telecommunication network with the help of automatic adaptive systems linking Terra Nova Bay and Dumont d'Urville stations and the future base at Dome C.

50-4283

Report of the Antarctic Traverse Workshop, 2-4 May 1994, Washington, DC.

Blaisdell, G.L., MP 3810, Symposium on Antarctic Logistics and Operations, 6th, Rome, Italy, 1994. Proceedings, [1994], p.321-322.

Meetings, Traverses, Transportation, Snow vehicles

This workshop is the third in a series of vehicle-related specialty meetings addressing the unique needs of national antarctic programs. Sponsored by the US National Science Foundation Office of Polar Programs, it addressed long antarctic traverses. The primary focus was on heavy hauling oversnow rather than short, light traverses with a purely scientific purpose. Because of the major concern for crevasses by all who traverse the antarctic terrain, this workshop included several scientific experts who addressed modern methods for selecting safe and efficient traverse routes and the use of impulse radar for detecting bridged sub-surface voids. It became readily apparent throughout the workshop that, despite a marked advance in such areas as antarctic clothing, berthing, food, and equipment, we today have no better record of avoiding crevasses on traverse than did Hillary and Fuchs in the mid 1950s.

50-4284

Installation and operation of the Italian oceanographic buoy in Terra Nova Bay polynya (Antarctica).

Cucinotta, A., Malagoli, C., Gasparoni, F., Symposium on Antarctic Logistics and Operations, 6th, Rome, Italy, 1994. Proceedings, [1994], p.337-347, 6 refs.

Weather stations, Sea ice, Instruments, Oceanography, Air ice water interaction, Polynyas, Antarctica—Terra Nova Bay

An instrumented moored buoy for long-term acquisition of oceanographic and meteorological data in antarctic waters has been installed in Terra Nova Bay in an area normally free of ice, but potentially affected by drifting ice features. Its purpose is mainly to collect data on its interaction with ice conditions encountered and allow the subsequent upgrade at an operational marine observatory. The prototype station is composed of 4 main subsystems and is equipped with a limited set of sensors, mainly oriented to follow and verify the buoy dynamics and integrity. The prototype station, marine and shore operations, and the results of experimentation and data acquisition carried out to date are discussed. (Auth. mod.)

50-4285

***Mac Weather:* improved meteorological support in Antarctica.**

Joseph, J.E., Symposium on Antarctic Logistics and Operations, 6th, Rome, Italy, 1994. Proceedings, [1994], p.349-352.

Weather forecasting, Meteorological instruments, Data transmission, Computers, Telecommunication, Weather stations, Antarctica—McMurdo Station

McMurdo Weather Office of the US Naval Support Force, Antarctica (locally known as "Mac Weather") has had to derive operational forecasts using tools which were dependent on limited communication links and processing gear. Some data sources and valuable forecast guidance were simply inaccessible until recently. In the last few years, there have been many improvements in the McMurdo communications architecture. With the introduction of Internet, satellite telephone capability, advances in processing gear and upgrades in software, the antarctic forecaster is no longer isolated from forecasting tools commonly available at other weather centers.

50-4286

Mat gives SSDC an Alaskan lease of life. *Offshore engineer,* Jan. 1987, p.44,46.

Offshore drilling, Floating structures, Steel structures, Caissons, Moorings, Stability, Beaufort Sea

50-4287

How the Arctic's top field will be developed. *Offshore engineer,* Jan. 1987, p.47-48.

Offshore drilling, Oil wells, Offshore structures, Caissons, Pipelines, Subsurface structures, Economic development, Arctic Ocean

50-4288

Arctic tool cuts teeth on gloryhole. *Offshore engineer,* Jan. 1987, p.52.

Offshore drilling, Boreholes, Rotary drilling, Hydraulic jets, Design, Arctic Ocean

50-4289

Mechanism of formation of nanocrystalline hematite prepared by freeze-drying.

Bermejo, E., Dantas, T., Lacour, C., Quarton, M., *Materials research bulletin,* May 1995, 30(5), p.645-652, 9 refs.

Freeze drying, Frozen liquids, Solutions, Particles, Sintering, Solubility, Ice crystal size, Heterogeneous nucleation, Microstructure, Scanning electron microscopy, Spectra

50-4290

Studies on ice nucleating behavior of AgI-AgBr-CuBr system.

Radhakrishnan, T., Baskar, K., Subramanian, C., Ramasamy, P., Radhakrishnan, K.R., *Materials research bulletin,* Mar. 1996, 31(3), p.301-306, 18 refs.

Frozen liquids, Solutions, Ice nuclei, Artificial nucleation, Heterogeneous nucleation, Silver iodide, X ray diffraction, Ion exchange, Freezing points, Temperature effects

50-4291

Perturbation-based finite element analyses of transmission line galloping.

Desai, Y.M., Yu, P., Shah, A.H., Popplewell, N., *Journal of sound and vibration,* Apr. 11, 1996, 191(4), p.469-489, 34 refs.

Transmission lines, Power line icing, Static stability, Vibration, Oscillations, Mechanical properties, Ice cover effect, Ice loads, Wind factors, Design criteria, Mathematical models

50-4292

Variations in the Odden, Greenland Sea—an interpretation of Special Sensory Microwave/ Imager ice concentration data.

Mitchelson-Jacob, E.G., *International journal of remote sensing,* Mar. 17, 1996, 17(5), p.1019-1029, 18 refs.

Remote sensing, Spaceborne photography, Radiometry, Ice surveys, Sensor mapping, Sea ice distribution, Ice edge, Diurnal variations, Image processing, Resolution, Greenland Sea

50-4293

Slow dynamics of water molecules in supercooled states.

Gallo, P., Sciortino, F., Tartaglia, P., Chen, S.H., *Physical review letters,* Apr. 8, 1996, 76(15), p.2730-2733, 27 refs.

Water structure, Liquid cooling, Molecular energy levels, Supercooling, Phase transformations, Viscosity, Thermodynamic properties, Temperature effects, Thermal diffusion, Simulation

50-4294

Yukon Territory snow survey bulletin & water supply forecast: April 1, 1996.

Canada. Indian and Northern Affairs. Water Resources Division, Whitehorse, 1996, 27p.

Snow surveys, River basins, Snow accumulation, Snow water equivalent, Snow hydrology, Runoff, River flow, Snow courses, Seasonal variations, Canada—Yukon Territory

50-4295

Adsorption and photochemistry of dinitrogen tetroxide on low temperature ice layers.

Rieley, H., McMurray, D.P., Haq, S., *Chemical Society, London. Journal. Faraday transactions,* Mar. 21, 1996, 92(6), p.933-939, 46 refs.

Cloud physics, Ice physics, Climatology, Polar stratospheric clouds, Photochemical reactions, Ice vapor interface, Radiation absorption, Gases, Adsorption, Ice spectroscopy, Infrared spectroscopy, Spectra, Surface properties, Simulation

50-4296

Geology of an area astride the Billefjorden fault zone, northern Dicksonland, Spitsbergen, Svalbard.

Lamar, D.L., Douglass, D.N., *Oslo. Norsk polarinstitutt. Skrifter,* Nov. 1995, No.197, 43p., 75 refs.

Geological surveys, Geological maps, Pleistocene, Geologic structures, Tectonics, Arctic landscapes, Quaternary deposits, Lithology, Rock properties, Stratigraphy, Glacial deposits, Glacial erosion, Norway—Spitsbergen

50-4297

Turbulence in the statically unstable oceanic boundary layer under arctic leads.

McPhee, M.G., Stanton, T.P., *Journal of geophysical research,* Mar. 15, 1996, 101(C3), p.6409-6428, 22 refs.

Oceanography, Air ice water interaction, Ice openings, Ice edge, Sea water freezing, Ocean currents, Turbulent boundary layer, Turbulent exchange, Heat flux, Buoyancy, Hydrography, Statistical analysis, Arctic Ocean

50-4298

Heat budgets of the Arctic Mediterranean and sea surface heat flux parameterizations for the Nordic Seas.

Simonsen, K., Haugan, P.M., *Journal of geophysical research,* Mar. 15, 1996, 101(C3), p.6553-6576, Refs. p.6573-6576.

Oceanography, Climatology, Ocean currents, Surface temperature, Heat flux, Heat loss, Air ice water interaction, Advection, Mathematical models, Statistical analysis, Ice cover effect, Arctic Ocean

50-4299

Inertial currents in the Beaufort Sea: observations of response to wind and shear.

Merrifield, M.A., Pinkel, R., *Journal of geophysical research,* Mar. 15, 1996, 101(C3), p.6577-6590, 26 refs.

Oceanography, Ocean currents, Turbulent boundary layer, Hydrography, Underwater acoustics, Ice water interface, Ice cover effect, Air ice water interaction, Wave propagation, Shear flow, Wind factors, Mathematical models, Beaufort Sea

50-4300

Oscillatory behavior in arctic sea ice concentrations.

Gloersen, P., Yu, J., Mollo-Christensen, E., *Journal of geophysical research,* Mar. 15, 1996, 101(C3), p.6641-6650, 27 refs.

Oceanography, Sea ice distribution, Spectra, Periodic variations, Oscillations, Spaceborne photography, Radiometry, Sensor mapping, Image processing, Statistical analysis, Air ice water interaction, Arctic Ocean

50-4301

Satellite imagery of the onset of streaming flow of ice streams C and D, West Antarctica.

Hodge, S.M., Doppelhammer, S.K., *Journal of geophysical research,* Mar. 15, 1996, 101(C3), p.6669-6677, 18 refs.

Glaciology, Ice sheets, Glacier flow, Grounded ice, Spaceborne photography, LANDSAT, Radiometry, Topographic features, Image processing, Periodic variations, Antarctica—West Antarctica

Five overlapping Landsat multispectral scanner satellite images of the interior of the West Antarctic ice sheet were enhanced with principal component analysis, high-pass filtering, and linear contrast stretching and merged into a mosaic by aligning surface features in the overlap areas. The mosaic was registered to geodetic coordinates, to an accuracy of about 1 km, using the five scene centers as control points. The onset of streaming flow of two tributaries of ice stream C and one tributary of ice stream D are visible in the mosaic. The onset appears to occur within a relatively short distance, less than the width of the ice stream, typically at a subglacial topographic feature such as a step or ridge. The ice streams extend farther up into the interior than previously mapped. The grounded portion of the West Antarctic ice sheet is perhaps best conceptualized as an ice sheet in which ice streams are embedded over most of its area, with slowly moving ice converging into fast moving ice streams in a widely distributed pattern, much like that of streams and rivers in a hydrologic basin. (Auth. mod.)

50-4302

Effects of snowpack grain size on satellite passive microwave observations from the Upper Colorado River Basin.

Josberger, E.G., Gloersen, P., Chang, A., Rango, A., *Journal of geophysical research,* Mar. 15, 1996, 101(C3), p.6679-6688, 24 refs.

Snow hydrology, River basins, Snow cover structure, Grain size, Depth hoar, Snow surveys, Spacecraft, Radiometry, Brightness, Statistical analysis, Correlation, United States—Colorado—Colorado River

50-4303

Search for proxy indicators of young sea ice thickness.

Zabel, I.H.H., Jezek, K.C., Gogineni, S.P., Kanagaratnam, P., *Journal of geophysical research,* Mar. 15, 1996, 101(C3), p.6697-6709, 45 refs.

Sea ice distribution, Young ice, Ice growth, Ice formation indicators, Dielectric properties, Surface roughness, Ice cover thickness, Remote sensing, Synthetic aperture radar, Radar echoes, Backscattering, Snow cover effect, Simulation, Ice models

50-4304

At the center of scientists' attention—problems of biology in northern seas. [V tsentre vnimaniia uchenykh—problemy biologii severnykh moreĭ]

Matishov, G.G., *Rossiĭskaia akademiia nauk. Vestnik,* Nov. 1995, 65(11), p.1012-1015, In Russian.

Marine biology, Plankton, Environmental impact, Pollution, Ecology, Sea ice, Research projects

50-4305

Initial analysis of coincident events between the SPASE and AMANDA detectors.

Miller, T., AMANDA Collaboration, *Nuclear physics B. Proceedings supplements,* June 1995, Vol.43, Trends in atmospheric physics. Proceedings of the workshop, p.245-248, 7 refs.

DLC QC770.N772

Solar radiation, Ice sheets, Measuring instruments, Antarctica—Amundsen-Scott Station

The present South Pole Air Shower Experiment (SPASE-1) and Antarctic Muon and Neutrino Detector Array (AMANDA) have been running in coincidence at the Amundsen-Scott Base since Feb., 1994. With both detectors runninng together, air shower size and direction can be measured by SPASE-1 and muon content measured by AMANDA. By studying events that trigger both detectors one can gain information about the primary cosmic ray composition in the region around the knee. The ability to find and analyze the coincident events has been demonstrated and the results as of Sep., 1994 are described. In addition, coincident operation of SPASE-1 and AMANDA is proving to be an extremely valuable diagnostic tool for AMANDA in studies of the ice clarity and performance of the array.

50-4306

Application of pipe temperature simulator for Norman Wells oil pipeline.

Nixon, J.F., MacInnes, K.L., *Canadian geotechnical journal,* Feb. 1996, 33(1), p.140-149, With French summary. 8 refs.

Hot oil lines, Underground pipelines, Surface temperature, Soil temperature, Thermal conductivity, Thermal regime, Temperature variations, Ground thawing, Permafrost transformation, Forecasting, Simulation, Models, Canada—Northwest Territories—Norman Wells

50-4307

On the prediction of hydraulic conductivity of frozen soils.

Tarnawski, V.R., Wagner, B., *Canadian geotechnical journal,* Feb. 1996, 33(1), p.176-180, With French summary. 20 refs.

Frozen ground physics, Soil water migration, Moisture transfer, Unfrozen water content, Hydraulics, Computerized simulation, Mathematical models

50-4308

Snow and avalanche. Annual report 1994-95.

Colorado Avalanche Information Center, Denver, Colorado Geological Survey, July 1995, 50p.

Avalanche forecasting, Avalanche protection, Meteorological factors, Snow accumulation, Accidents, Statistical analysis, Seasonal variations, United States—Colorado

50-4309
Effects of emissions from copper-nickel smelters on the frost hardiness of *Pinus sylvestris* needles in the subarctic region.
Sutinen, M.L., Raitio, H., Nivala, V., Ollikainen, R., Ritari, A., *New phytologist,* Mar. 1996, 132(3), p.503-512, 32 refs.
Forest ecosystems, Trees (plants), Plant tissues, Subarctic landscapes, Frost resistance, Acclimatization, Air pollution, Aerosols, Metals, Environmental impact, Environmental tests, Freeze thaw tests, Seasonal variations

50-4310
Global sea level rise and glacial isostatic adjustment: an analysis of data from the east coast of North America.
Peltier, W.R., *Geophysical research letters,* Apr. 1, 1996, 23(7), p.717-720, 13 refs.
Marine geology, Earth crust, Viscosity, Global change, Sea level, Glacier oscillation, Isostasy, Radioactive age determination, Correlation, Periodic variations, United States

50-4311
On the growth of ternary system $HNO_3/H_2SO_4/H_2O$ aerosol particles in the stratosphere.
Hamill, P., Tabazadeh, A., Kinne, S., Toon, O.B., Turco, R.P., *Geophysical research letters,* Apr. 1, 1996, 23(7), p.753-756, 12 refs.
Polar stratospheric clouds, Climatology, Cloud physics, Cloud droplets, Hydrates, Aerosols, Condensation, Profiles, Temperature effects, Simulation
The authors present a study of the growth of ternary solution (nitric acid, sulfuric acid and water) droplets in the stratosphere. The growth mechanism is heteromolecular condensation in which the particle is assumed to be in equilibrium with environmental water vapor. Model results are in reasonable agreement with the averaged extinction ratio obtained by the SAM II satellite system. (Auth. mod.)

50-4312
Overview of the atmospheric research program during the International Arctic Ocean Expedition of 1991 (IAOE-91) and its scientific results.
Leck, C., et al, *Tellus,* Apr. 1996, 48B(2), p.136-155, 41 refs.
Oceanography, Oceanographic surveys, Polar atmospheres, Marine atmospheres, Climatology, Global warming, Cloud cover, Condensation nuclei, Aerosols, Vapor diffusion, Air ice water interaction, Ice cover effect, Radiation balance, Sampling, Geochemical cycles, Arctic Ocean

50-4313
Central Arctic Ocean as a source of dimethyl sulfide—seasonal variability in relation to biological activity.
Leck, C., Persson, C., *Tellus,* Apr. 1996, 48B(2), p.156-177, 65 refs.
Oceanography, Marine biology, Marine atmospheres, Climatic factors, Water chemistry, Biomass, Geochemical cycles, Plankton, Aerosols, Vapor transfer, Air ice water interaction, Ice cover effect, Seasonal variations, Sampling, Arctic Ocean

50-4314
Planetary boundary layer structure and air mass transport during the International Arctic Ocean Expedition 1991.
Nilsson, E.D., *Tellus,* Apr. 1996, 48B(2), p.178-196, 54 refs.
Polar atmospheres, Marine atmospheres, Synoptic meteorology, Atmospheric boundary layer, Air masses, Air flow, Air ice water interaction, Advection, Subsidence, Turbulent diffusion, Ice cover effect, Arctic Ocean

50-4315
Aerosol number size distributions from 3 to 500 nm diameter in the arctic marine boundary layer during summer and autumn.
Covert, D.S., Wiedensohler, A., Aalto, P., Heintzenberg, J., McMurry, P.H., Leck, C., *Tellus,* Apr. 1996, 48B(2), p.197-212, 35 refs.
Polar atmospheres, Marine atmospheres, Atmospheric boundary layer, Cloud physics, Atmospheric composition, Aerosols, Sampling, Particle size distribution, Statistical analysis, Arctic Ocean

50-4316
Occurrence of an ultrafine particle mode less than 20 nm in diameter in the marine boundary layer during arctic summer and autumn.
Wiedensohler, A., Covert, D.S., Swietlicki, E., Aalto, P., Heintzenberg, J., Leck, C., *Tellus,* Apr. 1996, 48B(2), p.213-222, 24 refs.
Atmospheric boundary layer, Polar atmospheres, Marine atmospheres, Atmospheric composition, Aerosols, Cloud physics, Condensation nuclei, Heterogeneous nucleation, Particle size distribution, Statistical analysis, Sampling, Arctic Ocean

50-4317
Ice forming nuclei in the high Arctic.
Bigg, E.K., *Tellus,* Apr. 1996, 48B(2), p.223-233, 24 refs.
Polar atmospheres, Cloud physics, Marine atmospheres, Atmospheric boundary layer, Aerosols, Ice nuclei, Ice crystal growth, Heterogeneous nucleation, Condensation nuclei, Sampling, Temperature effects, Seasonal variations, Arctic Ocean

50-4318
Influences on formation and dissipation of high arctic fogs during summer and autumn and their interaction with aerosol.
Nilsson, E.D., Bigg, E.K., *Tellus,* Apr. 1996, 48B(2), p.234-253, 39 refs.
Polar atmospheres, Marine atmospheres, Atmospheric boundary layer, Climatic changes, Cloud physics, Aerosols, Fog formation, Fog dispersal, Advection fog, Vapor transfer, Air ice water interaction, Ice cover effect, Seasonal variations, Arctic Ocean

50-4319
Sudden changes in arctic atmospheric aerosol concentrations during summer and autumn.
Bigg, E.K., Leck, C., Nilsson, E.D., *Tellus,* Apr. 1996, 48B(2), p.254-271, 38 refs.
Climatology, Polar atmospheres, Marine atmospheres, Atmospheric boundary layer, Atmospheric composition, Aerosols, Cloud physics, Condensation nuclei, Particle size distribution, Turbulent diffusion, Seasonal variations, Sampling, Arctic Ocean

50-4320
Seasonal and short-term variability in dimethyl sulfide, sulfur dioxide and biogenic sulfur and sea salt aerosol particles in the arctic marine boundary layer during summer and autumn.
Leck, C., Persson, C., *Tellus,* Apr. 1996, 48B(2), p.273-299, 62 refs.
Climatology, Polar atmospheres, Marine atmospheres, Atmospheric boundary layer, Atmospheric composition, Cloud physics, Turbulent diffusion, Air ice water interaction, Ice cover effect, Aerosols, Particle size distribution, Seasonal variations, Sampling, Arctic Ocean

50-4321
Multi-elemental composition and sources of the high Arctic atmospheric aerosol during summer and autumn.
Maenhaut, W., Ducastel, G., Leck, C., Nilsson, E.D., Heintzenberg, J., *Tellus,* Apr. 1996, 48B(2), p.300-321, 47 refs.
Climatology, Polar atmospheres, Marine atmospheres, Atmospheric boundary layer, Air pollution, Atmospheric composition, Air flow, Seasonal variations, Sampling, Air ice water interaction, Ice cover effect, Aerosols, Particle size distribution, Impurities, Arctic Ocean

50-4322
Ion-induced nucleation around radon daughters in remote arctic maritime air.
Bigg, E.K., *Tellus,* Apr. 1996, 48B(2), p.322-328, 14 refs.
Climatology, Polar atmospheres, Marine atmospheres, Cloud physics, Atmospheric composition, Supersaturation, Radioactive isotopes, Aerosols, Vapor diffusion, Heterogeneous nucleation, Ion exchange, Particle size distribution, Sampling, Arctic Ocean

50-4323
Elasticity of partially saturated frozen sand.
Jacoby, M., Dvorkin, J., Liu, X.Z., *Geophysics,* Jan.-Feb. 1996, 61(1), p.288-293, 11 refs.
Frozen ground physics, Sands, Soil freezing, Soil tests, Soil cement, Seismic velocity, Elastic waves, Elastic properties, Wave propagation, Saturation, Porosity, Ice solid interface, Simulation

50-4325
Expedition ANTARKTIS-XI/3 of *Polarstern* in 1994. [Die Expedition ANTARKTIS-XI/3 mit FS *Polarstern* 1994]
Miller, H., ed, Grobe, H., ed, *Berichte zur Polarforschung,* 1996, No.188, 115p., In German (some segments in English) with English summary.
Geophysical surveys, Seismic surveys, Sediments, Sea ice, Marine biology, Antarctica—Bellingshausen Sea, Antarctica—Amundsen Sea
The main objective of this leg was marine geophysical research to study the crustal structure at the western margin of the antarctic continent. This was achieved by combined land-sea deep seismic sounding experiments using recording instruments on the inland ice as well as ocean bottom seismographs. At the same time multichannel seismic reflection lines were observed over the shelf and the adjacent deep sea areas in order to resolve the sedimentary cover and to gain an understanding of the depositional history, especially during the Cenozoic. While the deep seismic sounding experiments were part of the ANTALITH Project, the studies of the sedimentary cover also increased the understanding of the history of antarctic glaciation, since the major advance and retreat stages are documented in the sediments. (Auth. mod.)

50-4326
Expedition ARKTIS-VII/3 of RV *Polarstern* in 1990. [Die Expedition ARKTIS-VII/3 mit *Polarstern* 1990]
Miller, H., ed, Grobe, H., ed, *Berichte zur Polarforschung,* 1996, No.189, 73p., In German with summary, p.41-45, lithology charts, and CTD plot charts in English.
Expeditions, Geophysical surveys, Seismic surveys, Sea ice, Icebergs, Greenland—Scoresby Sund

50-4327
Relationship between cooling rates, cryoprotectant concentrations and salinities in the cryopreservation of marine microalgae.
Cañavate, J.P., Lubian, L.M., *Marine biology,* Dec. 1995, 124(2), p.325-334, 41 refs.
Marine biology, Algae, Plankton, Cryobiology, Preserving, Cooling rate, Solutions, Salinity, Viability, Chemical analysis

50-4328
Mid-infrared measurements of the atmospheric emission over the South Pole using a radiometrically calibrated Fourier transform spectrometer.
Van Allen, R., Murcray, F.J., Liu, X., *Applied optics,* Mar. 20, 1996, 35(9), p.1523-1530, 24 refs.
Polar atmospheres, Atmospheric composition, Stratosphere, Aerosols, Water vapor, Radiance, Radiometry, Infrared spectroscopy, Radiation absorption, Spectra, Antarctica—Amundsen-Scott Station
The authors conducted year-round measurements of the downwelling atmospheric infrared emission over the South Pole in 1992. The instrument covered the 550-1600 wave-number region with 1 wave-number resolution. The water vapor content for clear-sky cases was calculated and showed a good correlation with the surface temperature, with values ranging from 0.2 to 0.8 mm. Ozone-sonde profiles were compared with total column abundances of O_3 retrieved from the spectra. The experiment is explained in detail, including the instrumentation, calibration, and retrieval methods used. The calibrated spectra include information about several trace gases, water, clouds, temperature, profiles, and aerosols. (Auth. mod.)

50-4329
Frost hardiness of 16 European provenances of sessile oak growing in Scotland.
Deans, J.D., Harvey, F.J., *Forestry,* 1996, 69(1), p.5-11, 20 refs.
Trees (plants), Phenology, Cold tolerance, Frost resistance, Plant tissues, Cold weather tests, Freezing, Damage, Conduction, Temperature effects, Classifications, United Kingdom—Scotland

50-4330

Wind and snow damage in a thinning and fertilization experiment in *Picea abies* in southern Sweden.

Valinger, E., Pettersson, N., *Forestry,* 1996, 69(1), p.25-33, 32 refs.

Forestry, Trees (plants), Forest canopy, Growth, Nutrient cycle, Damage, Wind factors, Snow accumulation, Snow cover effect, Protection, Cold weather tests, Statistical analysis, Sweden

50-4331

Myth of the classic hydrosere model of bog succession.

Klinger, L.F., *Arctic and alpine research,* Feb. 1996, 28(1), p.1-9, 72 refs.

Swamps, Wetlands, Subarctic landscapes, Ecosystems, Revegetation, Plant ecology, Vegetation patterns, Stratigraphy, Paludification, Models

50-4332

Neoglaciation, glacier-dammed lakes, and vegetation change in northwestern British Columbia, Canada.

Clague, J.J., Mathewes, R.W., *Arctic and alpine research,* Feb. 1996, 28(1), p.10-24, 48 refs.

Pleistocene, Paleoecology, Paleoclimatology, Climatic changes, Mountain glaciers, Glacial hydrology, Glacial lakes, Glacier oscillation, Glacial deposits, Lacustrine deposits, Stratigraphy, Radioactive age determination, Canada—British Columbia

50-4333

Avalanche snow melting and summer streamflow differences between high-elevation basins, Cascade Mountains, British Columbia, Canada.

de Scally, F.A., *Arctic and alpine research,* Feb. 1996, 28(1), p.25-34, 32 refs.

Snow hydrology, Alpine landscapes, Avalanche deposits, Snow cover distribution, Mass transfer, Snowmelt, Snow water equivalent, River basins, Runoff, Stream flow, Hydrography, Seasonal variations, Canada—British Columbia—Cascade Mountains

50-4334

Little Ice Age evidence from a south-central North American ice core, U.S.A.

Naftz, D.L., et al, *Arctic and alpine research,* Feb. 1996, 28(1), p.35-41, 26 refs.

Paleoclimatology, Climatic changes, Alpine glaciation, Glacier ice, Ice cores, Stratigraphy, Isotope analysis, Oxygen isotopes, Radioactive age determination, Correlation, United States—Wyoming—Wind River Range

50-4335

Taku Glacier, southeast Alaska, U.S.A.: Late Holocene history of a tidewater glacier.

Motyka, R.J., Begét, J.E., *Arctic and alpine research,* Feb. 1996, 28(1), p.42-51, 31 refs.

Glacier oscillation, Calving, Climatic changes, Estuaries, Outwash, Moraines, Quaternary deposits, Stratigraphy, Radioactive age determination, Correlation, United States—Alaska—Taku Glacier

50-4336

Temporal and spatial distribution of trees in subalpine meadows of Mount Rainer National Park, Washington, U.S.A.

Rochefort, R.M., Peterson, D.L., *Arctic and alpine research,* Feb. 1996, 28(1), p.52-59, 45 refs.

Forest ecosystems, Plant ecology, Vegetation patterns, Revegetation, Snow cover effect, Climatic factors, Periodic variations, United States—Washington—Rainier, Mount

50-4337

Hydraulic architecture and structure of *Abies lasiocarpa* seedlings in three subalpine meadows of different moisture status in the eastern Olympic Mountains, Washington, U.S.A.

Kuuluvainen, T., Sprugel, D.G., Brooks, J.R., *Arctic and alpine research,* Feb. 1996, 28(1), p.60-64, 20 refs.

Plant ecology, Forest lines, Trees (plants), Plant tissues, Conduction, Moisture transfer, Meadow soils, Soil water, Growth, Viability, United States—Washington—Olympic Mountains

50-4338

Climatic significance of the bristlecone pine latewood frost-ring record at Almagre Mountain, Colorado, U.S.A.

Brunstein, F.C., *Arctic and alpine research,* Feb. 1996, 28(1), p.65-76, 41 refs.

Paleoclimatology, Alpine landscapes, Climatic changes, Volcanic ash, Paleoecology, Trees (plants), Frost action, Damage, Plant tissues, Age determination, Correlation, United States—Colorado—Almagre Mountain

50-4339

Tree-ring dating of extreme water level events at Lake Bienville, subarctic Québec, Canada.

Lepage, H., Bégin, Y., *Arctic and alpine research,* Feb. 1996, 28(1), p.77-84, 25 refs.

Plant ecology, Tundra vegetation, Vegetation patterns, Trees (plants), Plant tissues, Age determination, Subarctic landscapes, Geomorphology, Shore erosion, Ice erosion, Lake water, Water level, Correlation, Canada—Quebec—Bienville, Lake

50-4340

Nitrogen mineralization, nitrification, and denitrification in a High Arctic lowland ecosystem, Devon Island, N.W.T., Canada.

Chapin, D.M., *Arctic and alpine research,* Feb. 1996, 28(1), p.85-92, 38 refs.

Arctic landscapes, Ecosystems, Plant ecology, Nutrient cycle, Soil chemistry, Ground water, Sampling, Decomposition, Isotope analysis, Topographic effects, Canada—Northwest Territories—Devon Island

50-4341

Lacustrine pollen record from North Priokhot'ya: new information about Late Quaternary vegetational variations in western Beringia.

Anderson, P.M., Lozhkin, A.V., Brubaker, L.B., *Arctic and alpine research,* Feb. 1996, 28(1), p.93-98, 27 refs.

Pleistocene, Paleoecology, Palynology, Subarctic landscapes, Tundra vegetation, Vegetation patterns, Revegetation, Lacustrine deposits, Quaternary deposits, Geochronology, Climatic factors, Russia—Siberia

50-4342

Climatic and geographic patterns in snow density dynamics, northern Eurasia.

Onuchin, A.A., Burenina, T.A., *Arctic and alpine research,* Feb. 1996, 28(1), p.99-103, 39 refs.

Snow cover structure, Snow density, Distribution, Snow surveys, Snow depth, Periodic variations, Statistical analysis, Correlation, Models

50-4343

Germination characteristics of two species of *Polygonum* in relation to their altitudinal distribution on Mt. Fuji, Japan.

Nishitani, S., Masuzawa, T., *Arctic and alpine research,* Feb. 1996, 28(1), p.104-110, 23 refs.

Alpine landscapes, Grasses, Plant ecology, Growth, Temperature effects, Cold weather tests, Cold storage, Altitude, Japan—Fuji, Mount

50-4344

Vertical distribution of lichens on the mountain, Aucellabjerg, northeastern Greenland.

Hansen, E.S., *Arctic and alpine research,* Feb. 1996, 28(1), p.111-117, 24 refs.

Arctic landscapes, Mountains, Plant ecology, Lichens, Vegetation patterns, Biogeography, Altitude, Sampling, Greenland—Aucellabjerg

50-4345

Phase function calculations of single hexagonal bullet-like ice crystals.

Liu, C.L., Jonas, P.R., Saunders, C.P.R., *Annales geophysicae,* Dec. 1995, 13(12), p.1348-1354, 15 refs.

Cloud physics, Ice crystal optics, Ice crystal structure, Orientation, Optical properties, Light scattering, Refractivity, Mathematical models

50-4346

Explanation of the density maximum in water.

Cho, C.H., Singh, S., Robinson, G.W., *Physical review letters,* Mar. 4, 1996, 76(10), p.1651-1654, 19 refs.

Water structure, Molecular structure, Hydrogen bonds, Density (mass/volume), Compressive properties, Temperature effects, Thermodynamic properties, Mathematical models

50-4347

Seasonal nitrogen cycles on Pluto.

Hansen, C.J., Paige, D.A., *Icarus,* Apr. 1996, 120(2), p.247-265, 51 refs.

Planetary environments, Climatology, Atmospheric physics, Atmospheric pressure, Extraterrestrial ice, Frost, Regolith, Substrates, Albedo, Ice sublimation, Ice air interface, Ice cover effect, Seasonal variations, Thermal analysis, Models

50-4348

Mathematical model of frost heave and thaw settlement in pavements—draft.

Guymon, G.L., Berg, R.L., Johnson, T.C., Hromadka, T.V., II, MP 3812, U.S. Army Cold Regions Research and Engineering Laboratory, Hanover, Sep. 1986, 80p. + appends., 46 refs. For another version see 47-4870.

Pavement bases, Subgrade soils, Frozen ground mechanics, Soil tests, Soil freezing, Frost heave, Frost action, Thaw weakening, Soil water migration, Ice water interface, Temperature effects, Design criteria, Mathematical models

50-4349

Millimeter wave spectroscopic measurements over the South Pole. 2. An 11-month cycle of stratospheric ozone observations during 1993-1994.

Cheng, D.J., De Zafra, R.L., Trimble, C., *Journal of geophysical research,* Mar. 20, 1996, 101(D3), p.6781-6793, 24 refs.

Polar atmospheres, Stratosphere, Atmospheric composition, Atmospheric density, Cloud dissipation, Ozone, Spectroscopy, Turbulent diffusion, Seasonal variations, Antarctica—Amundsen-Scott Station

A quasi-continuous record of ozone profiles throughout the stratosphere over the South Pole has been obtained over an 11-month cycle from Feb. 1993 to Jan. 1994. This record includes the first winter measurements of ozone profiles in the altitude region above ≈30 km. Observations were made approximately every 3 days, using a high-sensitivity millimeter-wave spectrometer to quantitatively measure the pressure-broadened ozone rotational emission line at 276.923 GHz. Vertical mixing ratio profiles have been derived from pressure-broadened lineshapes by a deconvolution technique. Descent rates determined from ozone isopleths in the midstratosphere (25 to 35 km) are shown to be in good agreement with recent model estimates of downward transport in the winter vortex, and with the mid to lower stratospheric descent rate inferred from other South Pole measurements of N_2O. Total column measurements are in generally good agreement with those derived from a Dobson photospectrometer at the pole and from local ozonesonde measurements. All three indicate there was no significant increase in total ozone over the pole during the winter of 1993. (Auth. mod.)

50-4350

Interaction of peroxynitric acid with solid H_2O ice.

Li, Z.J., Friedl, R.R., Moore, S.B., Sander, S.P., *Journal of geophysical research,* Mar. 20, 1996, 101(D3), p.6795-6802, 31 refs.

Cloud physics, Climatology, Polar stratospheric clouds, Scavenging, Aerosols, Hydrates, Adsorption, Ice vapor interface, Vapor pressure, Ice spectroscopy, Temperature effects, Chemical analysis

50-4351

New theoretical framework for studies of vapor growth and sublimation of small ice crystals in the atmosphere.

Nelson, J.T., Baker, M.B., *Journal of geophysical research,* Mar. 20, 1996, 101(D3), p.7033-7047, 54 refs.

Cloud physics, Ice crystal growth, Ice crystal size, Ice crystal structure, Ice sublimation, Ice vapor interface, Vapor diffusion, Supersaturation, Simulation, Theories, Models

50-4352

Century of accumulation and temperature changes in Dronning Maud Land, Antarctica.

Isaksson, E., Karlén, W., Gundestrup, N., Mayewski, P.A., Whitlow, S.I., Twickler, M.S., *Journal of geophysical research*, Mar. 20, 1996, 101(D3), p.7085-7094, 43 refs.

Climatology, Climatic changes, Polar atmospheres, Ice sheets, Glacier mass balance, Snow accumulation, Firn, Stratigraphy, Snow composition, Drill core analysis, Isotope analysis, Radioactive age determination, Correlation, Periodic variations, Antarctica—Queen Maud Land

A mass balance program was initiated in the Vestfjella-Heimefrontfjella area of western Queen Maud Land during the austral summer of 1988-1989. As a part of this program, spatial and temporal variations in snow accumulation and temperature/stable isotopes are measured using shallow firn cores. This paper presents surface accumulation data and discusses the climatic implications of the stable isotope records from two shallow firn cores. One 30 m-deep core, obtained about 200 km from the coast at 700 m asl, covers the period 1932-1991. The other core was drilled at about 500 km from the coast at 2900 m asl and covers the period 1865-1991. The recent accumulation increase reported from several areas of the antarctic continent is not present in either of these records. Instead, this coastal record suggests a significant decrease in accumulation, with the strongest trend from about 1975. There is a positive trend in the oxygen isotope signal in both cores, which in the coastal core corresponds to a temperature increase of about 1.8°C since 1865. However, it is likely that part of this increase in $\delta^{18}O$ is due to a change of moisture source. (Auth. mod.)

50-4353

Sensitivity of shallow convective precipitation induced by land surface heterogeneities to dynamic and cloud microphysical parameters.

Liu, Y.Q., Avissar, R., *Journal of geophysical research*, Mar. 20, 1996, 101(D3), p.7477-7497, 45 refs.

Clouds (meteorology), Cloud physics, Precipitation (meteorology), Snow crystal growth, Convection, Snowfall, Ice nuclei, Ice crystal size, Turbulent diffusion, Air temperature, Temperature effects, Mathematical models, Simulation

50-4354

Thermal and vibrational investigation of crystal nucleation and growth from a physically confined and supercooled liquid.

Mu, R., Xue, Y., Henderson, D.O., Frazier, D.O., *Physical review B*, Mar. 1, 1996, 53(10), p.6041-6047, 16 refs.

Liquid cooling, Solutions, Porous materials, Supercooling, Frozen liquids, Thermodynamics, Phase transformations, Heterogeneous nucleation, Temperature measurement, Spectroscopy

50-4355

High-pressure elastic properties of the VI and VII phase of ice in dense H_2O and D_2O.

Shimizu, H., Nabetani, T., Nishiba, T., Sasaki, S., *Physical review B*, Mar. 1, 1996, 53(10), p.6107-6110, 22 refs.

Ice physics, Ice spectroscopy, Ice acoustics, High pressure ice, Deuterium oxide ice, Cubic ice, Elastic properties, Ice elasticity, Molecular structure, Latticed structures, Phase transformations

50-4356

Predicting snowfall from synoptic circulation: a comparison of linear regression and neural network methodologies.

McGinnis, D.L., GeoJournal Library. Vol.29. Neural nets: applications in geography. Edited by B.C. Hewitson et al, Dordrecht, Kluwer Academic Publishers, 1994, p.79-99, 5 refs.

DLC G70.2.N48

Snow cover distribution, Snowfall, Atmospheric circulation, Snow air interface, Forecasting, Synoptic meteorology, Statistical analysis, Computerized simulation, Computer applications, Data processing, Performance, Correlation, Accuracy

50-4357

Classification of arctic cloud and sea ice features in multi-spectral satellite data.

Key, J.R., GeoJournal Library. Vol.29. Neural nets: applications in geography. Edited by B.C. Hewitson et al, Dordrecht, Kluwer Academic Publishers, 1994, p.145-179.

DLC G70.2.N48

Climatology, Polar atmospheres, Cloud cover, Sea ice distribution, Surface properties, Ice cracks, Ice openings, Spaceborne photography, Image processing, Data processing, Computer programs, Classifications

50-4358

Northern exposure—traversing Baffin Island's icy reaches.

Dunn, J., *Canadian geographic*, Nov.-Dec. 1995, 115(6), p.70-83.

Arctic landscapes, Expeditions, Traverses, Canada—Northwest Territories—Baffin Island

50-4359

Air monitoring in the Arctic: results for selected persistent organic pollutants for 1992.

Fellin, P., et al, *Environmental toxicology and chemistry*, Mar. 1996, 15(3), p.253-261, 28 refs.

Polar atmospheres, Air pollution, Atmospheric composition, Aerosols, Hydrocarbons, Organic nuclei, Seasonal variations, Profiles, Sampling, Environmental tests, Canada—Northwest Territories—Alert

50-4360

Changes in the configuration of ice stream flow from the West Antarctic ice sheet.

Jacobel, R.W., Scambos, T.A., Raymond, C.F., Gades, A.M., *Journal of geophysical research*, Mar. 10, 1996, 101(B3), p.5499-5504, 18 refs.

Glacial geology, Glacier flow, Periodic variations, Velocity measurement, Subsurface investigations, Stratigraphy, Profiles, Spaceborne photography, Radar photography, Crevasses, Topographic surveys, Antarctica—Siple Dome

Surface-based ice-penetrating radar profiles on the northeast flank of Siple Dome support the hypothesis that a curvilinear scar first observed in advanced very high resolution radiometer satellite imagery represents the margin of a formerly active ice stream. The scar defines the southwestern boundary of an ice stream flowing from ice stream C to ice stream D, close to where it enters the Ross Ice Shelf. These studies show that the scar coincides with a trough and upward step in surface topography approximately 5 km across, underlain by a zone of disturbed internal stratigraphy revealed by the radar. Burial depth of the disturbed zone permits the calculation of the time of shutdown as occurring prior to approximately 1.3 ka. The configuration of the ice streams draining the West Antarctic ice sheet into the Ross Ice Shelf evidently changes with time, and any attempt to predict the evolution of the ice sheet must incorporate this observation. (Auth. mod.)

50-4361

Correction to "Failure of columnar saline ice under biaxial compression: failure envelopes and the brittle-to-ductile transition" by E.M. Schulson and O.Y. Nickolayev.

Schulson, E.M., Nickolayev, O.Y., *Journal of geophysical research*, Mar. 10, 1996, 101(B3), p.5659, 1 ref. For relevant paper see 50-2119.

Ice mechanics, Salt ice, Ice breaking, Phase transformations, Analysis (mathematics)

50-4362

Effect of color and texture on the surface temperature of asphalt concrete pavements.

Berg, R.L., MP 3811, U.S. Army Cold Regions Research and Engineering Laboratory, Hanover, May 1985, 69p., 18 refs. For another version see 38-1110.

Bituminous concretes, Pavements, Seasonal freeze thaw, Radiation absorption, Albedo, Surface temperature, Permafrost preservation, Thaw depth, Thaw weakening, Temperature control, Temperature measurement, Sealing, Protective coatings

This study evaluates the effects of surface color and texture on the thawing season surface temperatures of an asphaltic concrete roadway pavement in Fairbanks, AK. The roadway, Peger Road, carries a substantial volume of automobile and truck traffic daily; therefore, this study differs from most previous surface temperature studies of pavements that were not subjected to significant traffic-generated air turbulence and to the effects of tire wear on the surface treatments.

50-4363

Alleviating the effects of frost action on gas distribution and regulator station piping.

Arnold, J.M., Todres, H.A., Saha, N.C., Gas Research Institute. Final report. No.85/0125, Chicago, June 1985, 179p. + appends., Refs. p.173-179.

Gas pipelines, Underground pipelines, Stability, Frozen ground expansion, Frost action, Frost heave, Settlement (structural), Stress concentration, Ice solid interface, Countermeasures, Mathematical models

50-4364

Ice accretion and persistence measuring instrument.

Franklin, C.H., Rogne, C.O., Ann Arbor, Franklin Engineering Co., Apr. 1991, 46p., DACA33-90-C-0060.

Measuring instruments, Sensors, Design, Ice loads, Ice detection, Ice accretion, Ice solid interface, Cold weather tests

50-4365

Measurement of ice accretion and persistence at unmanned sites. Final report.

Hill, G.E., Boulder, Atek Data Corporation, Dec. 1990, 35p., DACA33-90-C-0062, 35 refs.

Ice loads, Ice solid interface, Ice accretion, Ice detection, Vibration, Sensors, Electronic equipment, Design, Data processing, Computer applications, Temperature effects

50-4366

Winter white.

Cruickshank, J., *Highways*, Mar. 1996, 63(11), p.42-43.

Road maintenance, Winter maintenance, Snow removal, Ice control, Salting, Brines, Physical properties

50-4367

Evaluation of frost action on concrete.

Kleiner, V.D., *Concrete international*, Mar. 1996, 18(3), p.42-43, 15 refs.

Concrete durability, Frost action, Damage, Chemical properties, Freeze thaw tests, Phase transformations, Water transport, Leaching, Mechanical tests

50-4368

No difference in leaf respiration rates among temperate, subarctic, and arctic species grown under controlled conditions.

Collier, D.E., *Canadian journal of botany*, Feb. 1996, 74(2), p.317-320, With French summary. 20 refs.

Plant ecology, Plants (botany), Plant physiology, Evapotranspiration, Acclimatization, Environmental tests, Temperature effects, Correlation

50-4369

Rain production in convective clouds as simulated in an axisymmetric model with detailed microphysics. Part 1: description of the model.

Reisin, T., Levin, Z., Tzivion, S., *Journal of the atmospheric sciences*, Feb. 1, 1996, 53(3), p.497-519, 50 refs.

Cloud physics, Precipitation (meteorology), Ice crystal growth, Snow pellets, Ice nuclei, Particle size distribution, Spectra, Classifications, Supersaturation, Coalescence, Ice vapor interface, Mathematical models

50-4370

Biomass burning recorded in the GISP2 ice core: a record from eastern Canada?

Taylor, K.C., Mayewski, P.A., Twickler, M.S., Whitlow, S.I., *Holocene*, 1996, 6(1), p.1-6, 39 refs.

Ice sheets, Ice cores, Chemical analysis, Age determination, Aerosols, Biomass, Forest ecosystems, Forest fires, Global change, Climatic changes, Correlation, Greenland

50-4371

Late-Holocene glaciation and twentieth-century retreat, northeastern Brooks Range, Alaska.
Evison, L.H., Calkin, P.E., Ellis, J.M., *Holocene,* 1996, 6(1), p.17-24, 36 refs.
Climatology, Climatic changes, Global warming, Glacier oscillation, Glacier ablation, Quaternary deposits, Glacial deposits, Moraines, Lichens, Radioactive age determination, Correlation, United States—Alaska—Brooks Range

50-4372

Late-Holocene glacier variations in the frontal and inner ranges of the Tian Shan, central Asia.
Savoskul, O.S., Solomina, O.N., *Holocene,* 1996, 6(1), p.25-35, 42 refs.
Climatology, Climatic changes, Mountain glaciers, Glacier oscillation, Quaternary deposits, Moraines, Lichens, Sampling, Radioactive age determination, Correlation, Russia—Tian Shan, China—Tian Shan

50-4373

9000-year history of vegetation development and disturbance patterns of swamp-forest in Dalarna, northern Sweden.
Segerström, U., Hörnberg, G., Bradshaw, R., *Holocene,* 1996, 6(1), p.37-48, 79 refs.
Paleoecology, Forest ecosystems, Vegetation patterns, Revegetation, Fires, Environmental impact, Subarctic landscapes, Swamps, Peat, Profiles, Radioactive age determination, Sweden—Dalarna

50-4374

Topographic control of equilibrium-line altitude depression on reconstructed 'Little Ice Age' glaciers, Grovabreen, western Norway.
Aa, A.R., *Holocene,* 1996, 6(1), p.82-89, 32 refs.
Climatology, Glacier oscillation, Glacier mass balance, Glacier surveys, Altitude, Topographic effects, Moraines, Mapping, Norway—Grovabreen

50-4375

Reassessment of supposed early 'Little Ice Age' and older Neoglacial moraines in the Sandane area of western Norway.
Matthews, J.A., Nesje, A., Dahl, S.O., *Holocene,* 1996, 6(1), p.106-110, 31 refs.
Glacial geology, Mountain glaciers, Glacier oscillation, Moraines, Sampling, Lichens, Age determination, Geochronology, Statistical analysis, Accuracy, Norway—Sandane

50-4376

Plausible hydrological scenario for the Bølling-Allerød atmospheric methane increase.
Kalin, R.M., Jirikowic, J.L., *Holocene,* 1996, 6(1), p.111-118, 50 refs.
Paleoclimatology, Geochemical cycles, Hydrologic cycle, Atmospheric composition, Natural gas, Hydrates, Clathrates, Ice cores, Aerosols, Sampling, Radioactive age determination, Models

50-4377

Huge Barents Sea gas field holds promise. *Offshore engineer,* May 1991, p.14.
Natural gas, Gas production, Gas wells, Offshore drilling, Economic development, Cost analysis, Barents Sea

50-4378

Siberian oil eating bacteria. *Offshore engineer,* June 1991, p.47.
Oil spills, Environmental protection, Microbiology, Bacteria, Degradation

50-4379

Ice free fire escapes. *Offshore engineer,* Aug. 1991, p.83.
Safety, Fires, Ice accretion, Electric heating, Ice control, Composite materials

50-4380

Cold and temperature control on Piper B. *Offshore engineer,* Nov. 1991, p.70.
Offshore drilling, Offshore structures, Superstructures, Temperature control, Frost protection, Electric heating

50-4381

Scientific results from the Antarctic Walk Environmental Research Expedition 1991-1993.
Yoshikawa, K., ed, Harada, K., ed, Ishimaru, S., ed, Tokyo, Antarctic Environmental Research Expedition Organizing Committee, 1995, 258p., Refs. passim. For individual papers see C-54914, E-54912, E-54913, E-54915, F-54917 through F-54921, G-54926, H-54924, H-54925, I-54916, I-54922, I-54923 or 50-4382 through 50-4389.
Expeditions, Logistics, Research projects, Equipment, Glaciology, Geology, Meteorological data
The main purpose of this expedition was to carry out snow and air sampling from the coasts inland toward the South Pole, and to conduct geomorphological investigations of the Ellsworth Mountains. This volume contains 15 reports of investigations carried out, including the results of efficiency and durability tests of a variety of polar equipment. The introduction gives details of the expedition's itinerary and logistics, outlines the field work activities, and describes the equipment used. A meteorological data list concludes the volume.

50-4382

Observations of moraine at the foot of Independence Hills in the southern Ellsworth Mountains, Antarctica.
Ishimaru, S., Yoshikawa, K., Kizaki, K., Harada, K., Scientific results from the Antarctic Walk Environmental Research Expedition 1991-1993, edited by K.Yoshikawa, K. Harada and S. Ishimaru, Tokyo, Antarctic Environmental Research Expedition Organizing Committee, 1995, p.17-32, 11 refs.
Moraines, Glacial deposits, Ice sheets, Rheology, Ice crystal size, Shear stress, Antarctica—Independence Hills
A moraine field exists at the northeast foot of Independence Hills. Eight ridge-type moraines, and between them mound-type moraines, are recognized. Each moraine has different till deposits. The development of the moraines is described as follows: at the time when the outlet glaciers were developing from the ice sheet in the southwestern Independence Hills, till clayey crystalline schist was transported from the ice sheet, and slate till was transported from the ice field in northeastern Independence Hills. Ridge-type moraines of N-S direction, and mound-type moraines formed between these two ice flows. Consequently, lowering of the surface of Independence Ice Field was followed by shifting of ridge-type moraine in the NW-SE direction. Dirty ice layers are distributed in Independence Ice Field and beneath the moraine close to the ice field. Measurement of C-axis fabric of ice crystals has revealed that shear stress acts along the dirty ice layer in the ice stress shear in the ice, around the layers. (Auth. mod.)

50-4383

Weathering processes for Paleozoic marbles in Independence Hills and Patriot Hills, Ellsworth Mountains, Antarctica.
Yoshikawa, K., Ishimaru, S., Harada, K., Scientific results from the Antarctic Walk Environmental Research Expedition 1991-1993, edited by K.Yoshikawa, K. Harada and S. Ishimaru, Tokyo, Antarctic Environmental Research Expedition Organizing Committee, 1995, p.33-45, 7 refs.
Weathering, Glacial geology, Bedrock, Frost shattering, Frost weathering, Moisture, Freeze thaw cycles, Geochemistry, Antarctica—Independence Hills, Antarctica—Patriot Hills
Weathering processes are mainly frost action and salt weathering in the Ellsworth Mountains of Antarctica, an extremely cold region. These processes were observed on different slopes composed of the same kind of marble, under different slope conditions. North-face and south-face walls of the bedrock showed the same shattering rate in summers of 1992 and 1993. Frost shattering of rocks is controlled by surface temperature, moisture, and the physical properties of the rock. The most important frost shattering factor in this study area was moisture balance, under the same kind of bedrock and the same freeze-thaw cycle. Snow particles are moved by katabatic wind, bringing moisture to the rock. Moisture is collected mainly in lower cliffs and cols. (Auth. mod.)

50-4384

Albedo on snow surface in Patriot Hills, Antarctica.
Shinohara, M., Ishimaru, S., Harada, K., Scientific results from the Antarctic Walk Environmental Research Expedition 1991-1993, edited by K.Yoshikawa, K. Harada and S. Ishimaru, Tokyo, Antarctic Environmental Research Expedition Organizing Committee, 1995, p.65-69, 1 ref.
Albedo, Snow surface, Sastrugi, Clouds (meteorology), Solar radiation, Antarctica—Patriot Hills
The purpose of this paper is to make clear the surface albedo in summer in Antarctica and its dependence on cloud amount, solar elevation and microtopography of the snow surface (sastrugi). The solar radiation and reflected solar radiation were measured at Patriot Hills from Nov. 1992 to Jan. 1993. For this period, cloud amount and the direction of the axis of sastrugi were observed. Mean albedo for this period was 77.1%. The albedo increased with decreasing solar radiation, so the values on cloudy days were higher than on clear days. Effects of sastrugi on albedo were not evident.

50-4385

Observation of snow crystals in Antarctica and Greenland.
Harada, K., Scientific results from the Antarctic Walk Environmental Research Expedition 1991-1993, edited by K.Yoshikawa, K. Harada and S. Ishimaru, Tokyo, Antarctic Environmental Research Expedition Organizing Committee, 1995, p.71-76, 2 refs.
Snow crystal structure, Ice crystal growth, Ice sheets, Antarctica—Patriot Hills
Snow crystals were collected in Antarctica and Greenland and their surface structures were analyzed. The snow crystals at Patriot Hills Camp were mainly columns; the types of crystal changed from plates to other types in one snowfall event. On the inland part of the antarctic ice sheet, columns were a major type of snow crystals as well. In Greenland, differing from Antarctica, dendritic crystals, hexagonal plates, needles and "tsuzumi" were observed. (Auth.)

50-4386

Surface feature of antarctic ice sheet between 80° and 90°S along the longitude 90°W.
Yoshikawa, K., Scientific results from the Antarctic Walk Environmental Research Expedition 1991-1993, edited by K.Yoshikawa, K. Harada and S. Ishimaru, Tokyo, Antarctic Environmental Research Expedition Organizing Committee, 1995, p.77-86, 3 refs.
Ice sheets, Ice surface, Wind factors, Snow surface, Snow accumulation, Sastrugi, Crevasses, Antarctica—Patriot Hills, Antarctica—Thiel Mountains
Antarctic ice sheet surface features were observed and explored. The study area was divided into katabatic wind and plateau zones. Surface features were generally classified into four categories: wind erosional, wind depositional, thermal action, and geophysical action forms. (Auth.)

50-4387

Study on variation of hardness of snow in Patriot Hills Camp, Antarctica.
Harada, K., Yoshikawa, K., Ishimaru, S., Scientific results from the Antarctic Walk Environmental Research Expedition 1991-1993, edited by K.Yoshikawa, K. Harada and S. Ishimaru, Tokyo, Antarctic Environmental Research Expedition Organizing Committee, 1995, p.87-94, 4 refs.
Snow hardness, Snow surface, Sastrugi, Wind factors, Snowdrifts, Snow accumulation, Antarctica—Patriot Hills
Observations of hardness of snow surface and weather conditions were carried out at Patriot Hills Camp from Dec. 1992 to Jan. 1993. The snow hardnesses of sastrugi and wave-shaped surface points were measured; the values range from 1,800 to 4,400 g/cm^2 at sastrugi, and from 1,000 to 7,000 g/cm^2 at the wave-shaped sites. The duration of the observation is divided into six periods; variations of hardness are discussed. During clear and light-wind days, hardness values increased gradually. During snow drifts, the hardness depended on the snow accumulation rates. (Auth.)

50-4388

On the chemical compositions of freshly fallen and drifting snow samples obtained between the Ronne Ice Shelf and the South Pole.
Watanabe, O., Kanamori, S., Kanamori, N., Kamiyama, K., Scientific results from the Antarctic Walk Environmental Research Expedition 1991-1993, edited by K.Yoshikawa, K. Harada and S. Ishimaru, Tokyo, Antarctic Environmental Research Expedition Organizing Committee, 1995, p.95-105, 4 refs.
Snow composition, Snow impurities, Atmospheric composition, Snow air interface, Antarctica—Patriot Hills, Antarctica—Mizuho Plateau
From Nov. 1992 to Jan. 1993, 27 freshly fallen snow samples were obtained during a traverse from Patriot Hills to the South Pole; the distance between the two points is 1,080 km. During the same period, 20 snow samples were obtained at Patriot Hills every time there was a snowfall. These samples were analyzed for $\delta^{18}O$, Cl^-, NO_3^-, SO_4^-, methane sulphonate (MSA), Na^+, K^+ and NH_4^+ (by ion chromatography). The results and their significance are reported here. Chemical analyses of snow samples over a wide area were also conducted on the Mizuho Plateau by the 29th Japanese Antarctic Research Expedition in Nov.-Dec. 1988. In the present report, the results of these two observations are compared to obtain information about the transport of substances through the atmosphere over the interior of the continent.

50-4389

Ionic constituents in surface snow samples obtained by Antarctic Walk Expedition, Summer 1992/93.

Osada, K., Matsunaga, K., Mori, I., Iwasaka, Y., Yoshikawa, K., Scientific results from the Antarctic Walk Environmental Research Expedition 1991-1993, edited by K.Yoshikawa, K. Harada and S. Ishimaru, Tokyo, Antarctic Environmental Research Expedition Organizing Committee, 1995, p.109-119, 20 refs.

Snow composition, Snow impurities, Atmospheric composition, Snow air interface, Traverses, Antarctica—Patriot Hills

Surface snows were sampled daily by a traverse team of the Japanese Antarctic Walk Expedition from Patriot Hills to South Pole (ca. 1080 km) between Nov. 1992 and Jan. 1993. To study spatial and temporal variations in snow chemistry, surface and fallen snow samples were also taken daily at a base camp near Patriot Hills for the same period. Sea-salt components (Na^+, Cl^- and Mg^{2+}) showed constantly lower concentration levels in higher inland and southern locations. Variations of methanesulfonate (MSA) and SO_4^{2-} concentration levels showed nearly parallel profiles and similar trends to sea-salt profiles but were still variable at inland locations. A comparison between the base camp and the traverse data set suggests a unique transport process for NO_3^- in higher inland regions. (Auth.)

50-4390

Earth Sciences. X ItaliAntartide Expedition, 1994-95: field data reports.

Italian Antarctic Research Programme, Siena, Sep. 1995, 64p., Refs. passim. For selected papers see C-54943, C-54946, E-54928 through E-54933, E-54935, E-54939 through E-54942, E-54944, E-54947 through E-54949, F-54945, L-64934, L-54936 through L-54938, L-54950, L-54951 or 50-4391 through 50-4394.

Geological surveys, Glaciology, Geophysical surveys

During the austral summer of 1994-95, the 10th Italian Expedition to Antarctica was carried out. Scientific activities in the field of earth sciences were carried out within the framework of the following four core projects: structure and evolution of the lithosphere in the Ross Sea area; periantarctic basins and antarctic plate margins; glaciology and paleoclimate; and geophysical observatories. This volume contains 24 brief reports of the field activities.

50-4391

First results of electric soundings on polar landforms of the Northern Foothills (Victoria Land, Antarctica).

Guglielmin, M., Biasini, A., Smiraglia, C., Italian Antarctic Research Programme. Earth Sciences. X ItaliAntartide Expedition, 1994-95: field data reports, Siena, Sep. 1995, p.44-46, 10 refs.

Rock glaciers, Patterned ground, Permafrost, Moraines, Electromagnetic prospecting, Sounding, Antarctica—Northern Foothills

During the X Italian expedition in Antarctica (Oct.-Nov. 1994) more than 20 d-c electrical soundings were carried out on different landforms in the Northern Foothills, such as rock glaciers, debris covered glaciers and beaches with patterned ground. A preliminary analysis of the collected data allowed recognition of different geological structures in the studied landforms. In particular, the authors found in every landform a thin active layer (5-20 cm); the resistivity values of these unfrozen sandy-gravelly material ranges from 1,300 to 2,000 ohm.m. Under this lies a layer of 1 to 3 m thick, characterized by a relatively low resistivity values (14,000-50,000 ohm.m).

50-4392

Strain net and ice flow monitoring of Hells Gate ice shelf (Terra Nova Bay, Antarctica).

Bondesan, A., Tison, J.L., Chappellaz, J., Maggi, V., Italian Antarctic Research Programme. Earth Sciences. X ItaliAntartide Expedition, 1994-95: field data reports, Siena, Sep. 1995, p.47-48, 9 refs.

Ice shelves, Sea ice, Glacier flow, Ice surface, Ablation, Strains, Antarctica—Hells Gate

One of the aims of the research carried out at Hells Gate Ice Shelf (HGIS), in order to define the particular conditions under which the different systems of marine ice accrete and interact with continental ice, is to individualize the ice flows feeding the ice shelf, and establish their origin, velocity and stress fields. During the 1993-94 antarctic expedition, a net of some 100 aluminium and plastic stakes with red flags was installed at the HGIS surface. Only 53 out of the 83 stakes of the main net have been found. Preliminary results of a topographic survey of the stakes, carried out in order to measure velocity, strains and ablation, are discussed.

50-4393

GPS geodetic activities in the 1994-95 antarctic campaign.

Capra, A., Radicioni, F., Italian Antarctic Research Programme. Earth Sciences. X ItaliAntartide Expedition, 1994-95: field data reports, Siena, Sep. 1995, p.49-50, 2 refs.

Geodetic surveys, Mapping, Imaging, Glacier flow, Velocity measurement, Antarctica—Hells Gate

Geodetic activities conducted in the 1994-95 campaign included some measurements for the control of glacial dynamics and for ground control of satellite images and air photograms with the aim of map and orthophoto planes production. GPS instruments were used, including the Trimble receiver model 4000 SSE in static, rapid-static and kinematic modes. Field work conducted in the Hells Gate area is described, including details of the GPS measurements taken at 5 points of the David-Drygalski glacier.

50-4394

Preliminary sedimentological and geotechnical data on cores collected in the Joides Basin (Ross Sea—Antarctica).

Corradi, N., Ferrari, M., Fierro, G., Ivaldi, R., Vetuschi Zuccolini, M., Italian Antarctic Research Programme. Earth Sciences. X ItaliAntartide Expedition, 1994-95: field data reports, Siena, Sep. 1995, p.51-54, 7 refs.

Glacier oscillation, Pleistocene, Glacial geology, Marine geology, Paleoclimatology, Sedimentation, Antarctica—Ross Sea

Six gravity cores were collected during the second leg of the X antarctic cruise with the aim of determining the physical and mechanical properties of the sediments through sedimentological and geotechnical analyses. The objective was to investigate how the action of the grounded ice had affected continental shelf sediments in the Ross Sea and to begin mapping to recognize the possible extension and thickness of glacial tongues during a period presumably corresponding to the last Pleistocene glacial cycle. Evidence suggests that variations in the extent of the ice sheets caused the west caps to move along the antarctic sea bottom, as has been proven by geophysical prospecting, core drilling and sea bottom sampling.

50-4395

Glacial or non-glacial origin for the Bigganjargga tillite, Finnmark, northern Norway.

Jensen, P.A., Wulff-Pedersen, E., *Geological magazine,* Mar. 1996, 133(2), p.137-145, 37 refs.

Pleistocene, Geologic processes, Stratigraphy, Glacial geology, Rock properties, Erosion, Striations, Sediments, Sediment transport, Mass flow, Origin, Accuracy, Norway—Bigganjargga

50-4396

Ardalin field flows despite weather, terrain.

Britton, M.W., Speirs, R., Pace, G., Sikes, C.T., *Oil & gas journal,* Oct. 9, 1995, 93(41), p.49-61, 1 ref.

Petroleum industry, Oil wells, Economic development, Crude oil, Hot oil lines, Pipeline insulation, Suspended pipelines, Cold weather operation, Cold weather construction, Tundra terrain, Design, Russia—Ardalin

50-4397

Specifying fracture toughness ranks high in line pipe selection.

Kiefner, J.F., Maxey, W.A., *Oil & gas journal,* Oct. 9, 1995, 93(41), p.62-66, 5 refs.

Pipelines, Steels, Composite materials, Cracking (fracturing), Brittleness, Temperature effects, Specifications, Classifications, Structural analysis

50-4398

Comparing simulated glacial climate and paleodata: a reexamination.

Broccoli, A.J., Marciniak, E.P., *Paleoceanography,* Feb. 1996, 11(1), p.3-14, 26 refs.

Paleoclimatology, Oceanography, Air ice water interaction, Climatic changes, Sea ice distribution, Water temperature, Surface temperature, Temperature variations, Ice cover effect, Simulation, Marine deposits, Correlation

50-4399

Tracking the sources of icebergs with lead isotopes: the provenance of ice-rafted debris in Heinrich layer 2.

Gwiazda, R.H., Hemming, S.R., Broecker, W.S., *Paleoceanography,* Feb. 1996, 11(1), p.77-93, 78 refs.

Marine geology, Paleoclimatology, Climatic changes, Oceanography, Icebergs, Ice rafting, Glacier melting, Calving, Glacial deposits, Bottom sediment, Drill core analysis, Isotope analysis, Geochronology, Labrador Sea

50-4400

Current water quality in Cook Inlet, Alaska, study.

University of Alaska. Environment and Natural Resources Institute, U.S. Department of Interior. Minerals Management Service. Outer Continental Shelf Study. No.MMS 95-0009, Anchorage, Mar. 1995, 124p. + appends., Refs. p.121-124.

Oceanographic surveys, Shores, Marine biology, Water chemistry, Hydrography, Water pollution, Suspended sediments, Hydrocarbons, Sampling, Statistical analysis, Chemical analysis, Environmental tests, United States—Alaska—Cook Inlet

50-4401

Full depth testing of frost susceptible soils.

Rice, D.C., [Boston], Massachusetts Department of Public Works, [1974], 13p., 7 refs.

Frozen ground mechanics, Frost heave, Soil tests, Stress concentration, Subgrade soils, Frost resistance, Specifications, Design criteria, Mechanical tests

50-4402

Aircraft icing over northwest Europe.

Ashley, H., *Air Weather Service. Forecaster memo,* Nov. 1979, 79(10), 5p.

Aircraft icing, Weather forecasting, Ice forecasting, Classifications, Synoptic meteorology, Seasonal variations

50-4403

Tips on avoiding low-level icing.

Schuyler, N., *AERO magazine,* Jan. 1986, p.1-5.

Aircraft icing, Research projects, Cloud physics, Cloud droplets, Supercooled clouds, Ice formation, Altitude, Air temperature, Temperature effects, Ice forecasting

50-4404

Unique aircraft icing event—a case study.

Peters, J.L., *U.S. Air Force. Third Weather Wing. Forecaster memo,* 1990, No.4, 14p., 3 refs.

Aircraft icing, Ice forecasting, Remote sensing, Radar echoes, Synoptic meteorology, Fronts (meteorology), Convection, Spaceborne photography

50-4405

Low cloud icing climatological data.

Takasugi, S., U.S. Air Force. Environmental Technical Applications Center. Report 6368, Washington, D.C., Jan. 1970, 14p. + appends., 14 refs.

Climatology, Cloud physics, Ice forecasting, Cloud cover, Classifications, Air temperature, Freezing points, Isotherms, Altitude, Seasonal variations

50-4406

Response of a research aircraft to icing and evaluation of severity indices.

Politovich, M.K., *Journal of aircraft,* Mar.-Apr. 1996, 33(2), p.291-297, 26 refs.

Aircraft icing, Ice reporting, Standards, Indexes (ratios), Meteorological factors, Cloud physics, Water content, Performance, Buoyancy, Degradation, Ice cover effect, Forecasting, Tests

50-4407

Characteristics of surface roughness associated with leading-edge ice accretion.

Shin, J.W., *Journal of aircraft,* Mar.-Apr. 1996, 33(2), p.316-321, 10 refs.

Aircraft icing, Ice accretion, Glaze, Ice cover thickness, Surface roughness, Turbulent boundary layer, Ice cover effect, Ice solid interface, Topographic features, Imaging, Wind tunnels

50-4408

Interaction between multiple line plumes: a model study with applications to leads.

Ching, C.Y., Fernando, H.J.S., Mofor, L.A., Davies, P.A., *Journal of physical oceanography*, Apr. 1996, 26(4), p.525-540, 38 refs.

Oceanography, Sea ice, Ice openings, Fluid dynamics, Buoyancy, Convection, Turbulent diffusion, Turbulent flow, Simulation

50-4409

Comparison of geostatistical methodologies used to estimate snow water equivalent.

Carroll, S.S., Cressie, N., *Water resources bulletin*, Apr. 1996, 32(2), p.267-278, 19 refs.

Snow hydrology, Snow surveys, River basins, Water supply, Snow cover distribution, Snow water equivalent, Forecasting, Statistical analysis, Mathematical models, Accuracy

50-4410

New ice jam database.

White, K.D., MP 3813, *Water resources bulletin*, Apr. 1996, 32(2), p.341-348, 10 refs.

River flow, River ice, Ice jams, Distribution, Periodic variations, Flood forecasting, Statistical analysis, Classifications, Water supply, Water balance

Ice jam data are often difficult to locate, and doing so requires a search of many different data sources. The U.S. Army Cold Regions Research and Engineering Laboratory (CRREL) has compiled an Ice Jam Database that provides information on nearly 9300 ice events in the United States. The information may be quantitative (e.g., event stage or discharge), qualitative (e.g., a narrative description), or a combination of both. References are provided to serve as a basis for further investigation. Although some selection bias may exist in the database because of its reliance on certain data sources, the database can be an asset in water resources planning and engineering. This paper is an overview of the CRREL Ice Jam Database and presents two applications of it.

50-4411

Revisiting the degree-day method for snowmelt computations—discussion.

Howard, C.D.D., *Water resources bulletin*, Apr. 1996, 32(2), p.411-413, 1 ref. For paper under discussion see 50-1653.

Snow hydrology, Snowmelt, Runoff forecasting, Degree days, Snow water content, Statistical analysis, Mathematical models, Simulation, Accuracy

50-4412

Quartzlike polymorph of ice.

Svishchev, I.M., Kusalik, P.G., *Physical review B*, Apr. 1, 1996, 53(14), p.R8815-R8817, 31 refs.

Ice physics, Ice crystal growth, Ice crystal structure, Molecular structure, Molecular energy levels, Static electricity, Electric fields, Phase transformations, High pressure ice, Computerized simulation

50-4413

Icebreaker agreement. *Offshore engineer*, Aug. 1992, p.191.

Icebreakers, Marine transportation, Construction, Finland

50-4414

Freezable wax plug for pipeline. *Offshore engineer*, Aug. 1992, p.208.

Offshore structures, Pipelines, Maintenance, Pipeline freezing, Cryogenics, Hydrocarbons, Solidification

50-4415

Heerema commits to Siberian gas crossing. *Offshore engineer*, Dec. 1992, p.7.

Gas pipelines, Offshore structures, Construction, Russia—Kara Sea

50-4416

Canadian Atlantic Storms Program: progress and plans of the meteorological component.

Stewart, R.E., *American Meteorological Society. Bulletin*. Mar. 1991, 72(3), p.364-371, 62 refs.

Weather forecasting, Marine meteorology, Synoptic meteorology, Snowfall, Turbulent boundary layer, Storms, Fronts (meteorology), Sounding, Research projects, Canada

50-4417

UNIWIPP: a University of Illinois field experiment to investigate the structure of mesoscale precipitation in winter storms.

Ramamurthy, M.K., Rauber, R.M., Collins, B.P., Shields, M.T., Kennedy, P.C., Clark, W.L., *American Meteorological Society. Bulletin*, June 1991, 72(6), p.764-776, 35 refs.

Precipitation (meteorology), Fronts (meteorology), Synoptic meteorology, Turbulent boundary layer, Storms, Classifications, Sounding, Profiles, Radar echoes, Snowfall, Research projects

50-4418

Microscopic dynamics of glycerol in its crystalline and glassy states.

Bermejo, F.J., Criado, A., de Andres, A., Enciso, E., Schober, H., *Physical review B*, Mar. 1, 1996, 53(9), p.5259-5267, 32 refs.

Liquid cooling, Supercooling, Hydrocarbons, Solutions, Viscosity, Crystal growth, Molecular structure, Spectroscopy, Spectra, Temperature effects, Low temperature tests, Thermodynamic properties

50-4419

Northern Sea Route; future & perspective.

Northern Sea Route; future & perspective. Proceedings of INSROP Symposium, Tokyo, Oct. 1-6, 1995, Kitagawa, H., ed, Tokyo, Ship & Ocean Foundation, 1996, 687p., For selected papers see 50-4420 through 50-4491. Includes discussions, summaries and reports.

Ice navigation, Marine transportation, Icebreakers, Data processing, Environmental impact, International cooperation, Ice solid interface, Ships, Tanker ships, Design, Design criteria, Northern Sea Route

50-4420

Introduction to INSROP.

Østreng, W., Northern Sea Route; future & perspective. Proceedings of INSROP Symposium, Tokyo, 1-6 Oct., 1995. Edited by H. Kitagawa, Tokyo, Ship & Ocean Foundation, 1996, p.3-13.

History, Ice navigation, Marine transportation, International cooperation, Northern Sea Route

50-4421

Arctic and Japan.

Fujita, Y., Northern Sea Route; future & perspective. Proceedings of INSROP Symposium, Tokyo, 1-6 Oct., 1995. Edited by H. Kitagawa, Tokyo, Ship & Ocean Foundation, 1996, p.17-22.

Research projects, History, Northern Sea Route, Japan

50-4422

Arctic and Russia.

Granberg, A.G., Northern Sea Route; future & perspective. Proceedings of INSROP Symposium, Tokyo, 1-6 Oct., 1995. Edited by H. Kitagawa, Tokyo, Ship & Ocean Foundation, 1996, p.23-28.

Ice navigation, Marine transportation, Economic development, Legislation, International cooperation, Northern Sea Route, Russia

50-4423

Arctic and Europe.

Gerhardsen, T.S., Northern Sea Route; future & perspective. Proceedings of INSROP Symposium, Tokyo, 1-6 Oct., 1995. Edited by H. Kitagawa, Tokyo, Ship & Ocean Foundation, 1996, p.29-33.

International cooperation, History, Marine transportation, Economic development, Natural resources, Northern Sea Route

50-4424

Arctic: historical outline.

Ohta, Y., Northern Sea Route; future & perspective. Proceedings of INSROP Symposium, Tokyo, 1-6 Oct., 1995. Edited by H. Kitagawa, Tokyo, Ship & Ocean Foundation, 1996, p.37-38.

History, Marine transportation, Ice navigation, Northern Sea Route

50-4425

Experimental voyage through Northern Sea Route.

Yamaguchi, H., Northern Sea Route; future & perspective. Proceedings of INSROP Symposium, Tokyo, 1-6 Oct., 1995. Edited by H. Kitagawa, Tokyo, Ship & Ocean Foundation, 1996, p.39-90, 14 refs.

Ice navigation, Performance, Ships, Marine transportation, Icebreakers, Ice conditions, Spacecraft, Maps, Tests, Air temperature, Water temperature, Salinity, Northern Sea Route

50-4426

INSROP GIS—the concept and its role in INSROP.

Løvås, S.M., Smith, C., Northern Sea Route; future & perspective. Proceedings of INSROP Symposium, Tokyo, 1-6 Oct., 1995. Edited by H. Kitagawa, Tokyo, Ship & Ocean Foundation, 1996, p.93-100, 4 refs.

Data processing, Computer programs, Computer applications, Marine transportation, Ice navigation, Northern Sea Route

50-4427

Russian module of the INSROP information system.

Grishchenko, V.D., Smirnov, V.G., Deviataev, O.S., Shcherbakov, IU.A., Northern Sea Route; future & perspective. Proceedings of INSROP Symposium, Tokyo, 1-6 Oct., 1995. Edited by H. Kitagawa, Tokyo, Ship & Ocean Foundation, 1996, p.101-104, 1 ref.

Data processing, Ice navigation, Marine transportation, Northern Sea Route

50-4428

Specialized ice information for planning sea operations along the NSR.

Brovin, A.I., Frolov, S.V., IUlin, A., Northern Sea Route; future & perspective. Proceedings of INSROP Symposium, Tokyo, 1-6 Oct., 1995. Edited by H. Kitagawa, Tokyo, Ship & Ocean Foundation, 1996, p.105-110, 11 refs.

Ice conditions, Ice navigation, Marine transportation, Data processing, Sea ice, Ice forecasting, Northern Sea Route

50-4429

Preliminary application of Canadian ice regime system to the Northern Sea Route.

Jones, S.J., Hagen, D.L., Frederking, R.M.W., Northern Sea Route; future & perspective. Proceedings of INSROP Symposium, Tokyo, 1-6 Oct., 1995. Edited by H. Kitagawa, Tokyo, Ship & Ocean Foundation, 1996, p.111-119, 5 refs.

Sea ice, Ice conditions, Marine transportation, Computer applications, Ice navigation, Data processing, Northern Sea Route, Russia—Kara Sea, Barents Sea

50-4430

Flaking tests to measure large scale strength of ice.

Jones, S.J., Spencer, P.A., Masterson, D.M., Gagnon, R.E., Northern Sea Route; future & perspective. Proceedings of INSROP Symposium, Tokyo, 1-6 Oct., 1995. Edited by H. Kitagawa, Tokyo, Ship & Ocean Foundation, 1996, p.121-129, 7 refs.

Ice cover strength, Ice solid interface, Ice navigation, Ice loads, Ice temperature, Ice cover thickness, Northern Sea Route

50-4431

Salient features of the design of large arctic ships with a restricted draft.

Tsoĭ, L.G., Northern Sea Route: future & perspective. Proceedings of INSROP Symposium, Tokyo, 1-6 Oct., 1995. Edited by H. Kitagawa, Tokyo, Ship & Ocean Foundation, 1996, p.131-135, 7 refs.

Ships, Icebreakers, Design, Design criteria, Ice navigation, Performance, Ice solid interface, Ice cover thickness, Northern Sea Route

50-4432
Drift tests of model floes in a circulation water channel.
Rheem, C.K., Yamaguchi, H., Kato, H., Northern Sea Route; future & perspective. Proceedings of INSROP Symposium, Tokyo, 1-6 Oct., 1995. Edited by H. Kitagawa, Tokyo, Ship & Ocean Foundation, 1996, p.137-143, 5 refs.
Drift, Ice floes, Channels (waterways), Ice models, Pack ice

50-4433
Numerical simulations of ice floes movement around an ocean structure using a distributed mass/discrete floe model.
Rheem, C.K., Yamaguchi, H., Kato, H., Northern Sea Route; future & perspective. Proceedings of INSROP Symposium, Tokyo, 1-6 Oct., 1995. Edited by H. Kitagawa, Tokyo, Ship & Ocean Foundation, 1996, p.145-152, 12 refs.
Ice models, Ice floes, Ice solid interface, Ice models, Channels (waterways)

50-4434
Project I: natural conditions and ice navigation.
Løvås, S.M., Northern Sea Route; future & perspective. Proceedings of INSROP Symposium, Tokyo, 1-6 Oct., 1995. Edited by H. Kitagawa, Tokyo, Ship & Ocean Foundation, 1996, p.155-166, 9 refs.
Includes executive summaries of 8 reports, with addresses of authors.
Marine transportation, Ice navigation, Data processing, Sea ice, Ice conditions, Northern Sea Route

50-4435
Project I: natural conditions and ice navigation.
Buzuev, A., Northern Sea Route; future & perspective. Proceedings of INSROP Symposium, Tokyo, 1-6 Oct., 1995. Edited by H. Kitagawa, Tokyo, Ship & Ocean Foundation, 1996, p.167-172, 14 refs.
Marine transportation, Ice navigation, Data processing, Damage, Ships, Icebreakers, Northern Sea Route

50-4436
Environmental factors: conceptual design and current status.
Hansson, R., Moe, K.A., Northern Sea Route; future & perspective. Proceedings of INSROP Symposium, Tokyo, 1-6 Oct., 1995. Edited by H. Kitagawa, Tokyo, Ship & Ocean Foundation, 1996, p.205-211, 19 refs.
Environmental impact, Marine transportation, Ice navigation, Organizations, Research projects, International cooperation, Data processing, Northern Sea Route

50-4437
Ecological safety of navigation on the Northern Sea Route.
Semanov, G.N., Northern Sea Route; future & perspective. Proceedings of INSROP Symposium, Tokyo, 1-6 Oct., 1995. Edited by H. Kitagawa, Tokyo, Ship & Ocean Foundation, 1996, p.223-227, 5 refs.
Environmental impact, Water pollution, Nuclear power, Icebreakers, Ships, Marine transportation, Northern Sea Route

50-4438
Environmental impact assessment (EIA) in INSROP.
Thomassen, J., Løvås, S.M., Vefsnmo, S., Northern Sea Route; future & perspective. Proceedings of INSROP Symposium, Tokyo, 1-6 Oct., 1995. Edited by H. Kitagawa, Tokyo, Ship & Ocean Foundation, 1996, p.229-236, 14 refs.
Environmental impact, Marine transportation, Ecosystems, Data processing, Northern Sea Route

50-4439
Project II: environmental factors.
Hansson, R., Moe, K.A., Northern Sea Route; future & perspective. Proceedings of INSROP Symposium, Tokyo, 1-6 Oct., 1995. Edited by H. Kitagawa, Tokyo, Ship & Ocean Foundation, 1996, p.239-242.
Environmental impact, Marine transportation, Ecosystems, Northern Sea Route

50-4440
Project II.6.2: Environmental safety of navigation.
Tsoĭ, L.G., Moreĭnis, F.A., Zubkova, A., Karavanov, S.B., Volkov, V., Northern Sea Route; future & perspective. Proceedings of INSROP Symposium, Tokyo, 1-6 Oct., 1995. Edited by H. Kitagawa, Tokyo, Ship & Ocean Foundation, 1996, p.243-244.
Environmental impact, Environmental protection, Marine transportation, Icebreakers, Tanker ships, Oil spills, Northern Sea Route

50-4441
Northern Sea Route and the regional development in the North.
Høifødt, S.I., Northern Sea Route; future & perspective. Proceedings of INSROP Symposium, Tokyo, 1-6 Oct., 1995. Edited by H. Kitagawa, Tokyo, Ship & Ocean Foundation, 1996, p.253-258, 3 refs.
Marine transportation, Economic development, Regional planning, Natural resources, International cooperation, Northern Sea Route

50-4442
Significance of the NSR for regional development in arctic areas of Russia.
Granberg, A.G., Northern Sea Route; future & perspective. Proceedings of INSROP Symposium, Tokyo, 1-6 Oct., 1995. Edited by H. Kitagawa, Tokyo, Ship & Ocean Foundation, 1996, p.259-266.
Regional planning, Economic development, Marine transportation, International cooperation, Russia, Northern Sea Route

50-4443
Northern Sea Route: is it a viable marine insurance risk?
Gold, E., Northern Sea Route; future & perspective. Proceedings of INSROP Symposium, Tokyo, 1-6 Oct., 1995. Edited by H. Kitagawa, Tokyo, Ship & Ocean Foundation, 1996, p.267-272, 17 refs.
Marine transportation, Economic analysis, Environmental impact, Pollution, Northern Sea Route

50-4444
Project III: trade and commercial shipping aspects.
Ivanov, IU.M., Northern Sea Route; future & perspective. Proceedings of INSROP Symposium, Tokyo, 1-6 Oct., 1995. Edited by H. Kitagawa, Tokyo, Ship & Ocean Foundation, 1996, p.275-276.
Marine transportation, International cooperation, Economic development, Northern Sea Route, Russia

50-4445
Project III.6.1: Survey of logistics models.
Shchelkanov, A.G., Kelberg, IU.A., Griazev, R.N., Northern Sea Route; future & perspective. Proceedings of INSROP Symposium, Tokyo, 1-6 Oct., 1995. Edited by H. Kitagawa, Tokyo, Ship & Ocean Foundation, 1996, p.282-283.
Marine transportation, Models, Icebreakers, Northern Sea Route

50-4446
Project III.7.2: Potential of the NSR as a regular cargo service.
Ivanov, IU.M., Logvinovich, E.G., Northern Sea Route; future & perspective. Proceedings of INSROP Symposium, Tokyo, 1-6 Oct., 1995. Edited by H. Kitagawa, Tokyo, Ship & Ocean Foundation, 1996, p.285-286.
Marine transportation, Economic development, International cooperation, Northern Sea Route

50-4447
Project III.11.1: New concepts in removing ice.
Ierusalimskiĭ, A.V., Northern Sea Route; future & perspective. Proceedings of INSROP Symposium, Tokyo, 1-6 Oct., 1995. Edited by H. Kitagawa, Tokyo, Ship & Ocean Foundation, 1996, p.287-288.
Ice removal, Ice solid interface, Icebreakers, Ice navigation, Countermeasures, Ice breaking, Ice cover, Northern Sea Route

50-4448
Project III.12.1: improve information on navigating the NSR.
Baskin, A.T., Northern Sea Route; future & perspective. Proceedings of INSROP Symposium, Tokyo, 1-6 Oct., 1995. Edited by H. Kitagawa, Tokyo, Ship & Ocean Foundation, 1996, p.289-290.
Data processing, Legislation, Maps, Ice navigation, Marine transportation, Northern Sea Route

50-4449
Russian Arctic straits under international law.
Brubaker, D., Northern Sea Route; future & perspective. Proceedings of INSROP Symposium, Tokyo, 1-6 Oct., 1995. Edited by H. Kitagawa, Tokyo, Ship & Ocean Foundation, 1996, p.293-302, 104 refs.
Legislation, International cooperation, Marine transportation, Northern Sea Route, Russia

50-4450
Current policy of the Russian Federation regarding development and management of the Northern Sea Route System.
Arikaĭnen, A.I., Kossov, O., IAkovlev, A.N., Ushakov, A.P., Northern Sea Route; future & perspective. Proceedings of INSROP Symposium, Tokyo, 1-6 Oct., 1995. Edited by H. Kitagawa, Tokyo, Ship & Ocean Foundation, 1996, p.303-310, 8 refs.
Economic development, Regional planning, Marine transportation, Legislation, Ports, International cooperation, Military operation, Northern Sea Route, Russia

50-4451
Environmental security and the NSR: a pan-Arctic challenge?
Østreng, W., Northern Sea Route; future & perspective. Proceedings of INSROP Symposium, Tokyo, 1-6 Oct., 1995. Edited by H. Kitagawa, Tokyo, Ship & Ocean Foundation, 1996, p.311-320, 33 refs.
Environmental impact, Marine transportation, International cooperation, Economic development, Oil spills, Pollution, Albedo, Northern Sea Route

50-4452
Northern Sea-Route: conditions for sailing according to community and legislation—with a special emphasis on port state jurisdiction.
Örebech, P., Northern Sea Route; future & perspective. Proceedings of INSROP Symposium, Tokyo, 1-6 Oct., 1995. Edited by H. Kitagawa, Tokyo, Ship & Ocean Foundation, 1996, p.321-328, 7 refs.
Legislation, International cooperation, Marine transportation, Ports, Northern Sea Route

50-4453
Perceptions and relations between Russia and its northeast Asian neighbors—a stumbling block to cooperation in the Russian Arctic?
Simonsen, H., Northern Sea Route; future & perspective. Proceedings of INSROP Symposium, Tokyo, 1-6 Oct., 1995. Edited by H. Kitagawa, Tokyo, Ship & Ocean Foundation, 1996, p.329-338, 13 refs.
International cooperation, Marine transportation, Economic development, Northern Sea Route, Russia

50-4454
Legal status of the Northern Sea Route.
Timchenko, L.D., Northern Sea Route; future & perspective. Proceedings of INSROP Symposium, Tokyo, 1-6 Oct., 1995. Edited by H. Kitagawa, Tokyo, Ship & Ocean Foundation, 1996, p.349-354, 26 refs.
Legislation, Marine transportation, International cooperation, Northern Sea Route, Russia

50-4455
Project IV: political, legal and strategic factors.
Ushakov, A.P., Northern Sea Route; future & perspective. Proceedings of INSROP Symposium, Tokyo, 1-6 Oct., 1995. Edited by H. Kitagawa, Tokyo, Ship & Ocean Foundation, 1996, p.361-362.
Marine transportation, History, International cooperation, Environmental impact, Safety, Research projects, Northern Sea Route

50-4456
Project IV.1.1: historical and current use of the Northern Sea Route.
Ivanov, IU.M., Ushakov, A.P., Bulatov, V., Northern Sea Route; future & perspective. Proceedings of INSROP Symposium, Tokyo, 1-6 Oct., 1995. Edited by H. Kitagawa, Tokyo, Ship & Ocean Foundation, 1996, p.363-364.
Marine transportation, History, Ice navigation, Safety, Northern Sea Route

50-4457
Project IV.1.2: "NSR-pilot" guide to navigation along the NSR.
Mikhaĭlichenko, V., IAkovlev, A.N., Ushakov, A.P., Northern Sea Route; future & perspective. Proceedings of INSROP Symposium, Tokyo, 1-6 Oct., 1995. Edited by H. Kitagawa, Tokyo, Ship & Ocean Foundation, 1996, p.365, 1 ref.
Navigation, Ice navigation, Marine transportation, Manuals, Northern Sea Route

50-4458
Russian Arctic water under international law.
Brubaker, D., Northern Sea Route; future & perspective. Proceedings of INSROP Symposium, Tokyo, 1-6 Oct., 1995. Edited by H. Kitagawa, Tokyo, Ship & Ocean Foundation, 1996, p.369-370, 3 refs.
Legislation, International cooperation, Marine transportation, Northern Sea Route, Russia

50-4459
Influence of ice conditions on NSR transit sailing.
Vefsnmo, S., Løvås, S.M., Smith, C., Northern Sea Route; future & perspective. Proceedings of INSROP Symposium, Tokyo, 1-6 Oct., 1995. Edited by H. Kitagawa, Tokyo, Ship & Ocean Foundation, 1996, p.383-389, 14 refs.
Ice conditions, Sea ice, Ice navigation, Marine transportation, Ice cover thickness, Icebreakers, Ice solid interface, Northern Sea Route

50-4460
Icebreaker transit analysis for a voyage across the Arctic Ocean.
Brigham, L.W., Northern Sea Route; future & perspective. Proceedings of INSROP Symposium, Tokyo, 1-6 Oct., 1995. Edited by H. Kitagawa, Tokyo, Ship & Ocean Foundation, 1996, p.391-396, 5 refs.
Expeditions, Ice navigation, Icebreakers, Performance, Ice cover thickness, Northern Sea Route

50-4461
Preliminary study of tankers for year-round transportation of crude oil from Ob Gulf.
Tsoĭ, L.G., Bhat, S.U., Moreĭnis, F.A., Northern Sea Route; future & perspective. Proceedings of INSROP Symposium, Tokyo, 1-6 Oct., 1995. Edited by H. Kitagawa, Tokyo, Ship & Ocean Foundation, 1996, p.397-400, 5 refs.
Crude oil, Petroleum transportation, Marine transportation, Tanker ships, Icebreakers, Performance, Design criteria, Northern Sea Route, Russia—Ob' River

50-4462
Determination of the ice strength for calculation of the ice load.
Bekker, A.T., Gomol'skiĭ, S.G., Northern Sea Route; future & perspective. Proceedings of INSROP Symposium, Tokyo, 1-6 Oct., 1995. Edited by H. Kitagawa, Tokyo, Ship & Ocean Foundation, 1996, p.401-404, 4 refs.
Sea ice, Ice solid interface, Offshore structures, Ice cover strength, Ice loads, Analysis (mathematics), Stresses, Northern Sea Route

50-4463
Definition of the loading regime on offshore structures from drifting ice covers.
Bekker, A.T., Seliverstov, V.I., Uvarova, T.E., Northern Sea Route; future & perspective. Proceedings of INSROP Symposium, Tokyo, 1-6 Oct., 1995. Edited by H. Kitagawa, Tokyo, Ship & Ocean Foundation, 1996, p.405-407, 5 refs.
Sea ice, Ice solid interface, Offshore structures, Ice cover strength, Drift, Velocity, Ice loads, Ice models, Loads (forces), Northern Sea Route

50-4464
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Ships, Icebreakers, Tanker ships, Design, Ice loads, Loads (forces), Northern Sea Route

50-4466
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50-4480

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50-4481

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Ice conditions, Ice navigation, Sea ice, Statistical analysis, Marine transportation, Northern Sea Route, Chukchi Sea, Russia—East Siberian Sea, Russia—Kara Sea, Russia—Laptev Sea

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50-4483

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Liquefied gases, Natural gas, Gas production, Economic analysis, Tanker ships, Marine transportation, Russia—Yamal Peninsula

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50-4491

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Climatology, Precipitation (meteorology), Weather modification, Cloud physics, Cloud seeding, Statistical analysis, Meteorological data, Correlation, Accuracy

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Composite materials, Clothing, Protective coatings, Waterproofing, Permeability, Water vapor, Vapor transfer, Vapor diffusion, Ice accretion, Ice cover effect, Cold weather performance, Temperature effects

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50-4500

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50-4502
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Atmospheric composition, Cloud physics, Remote sensing, Radar echoes, Backscattering, Ice crystal size, Ice crystal structure, Ice water interface, Ice optics, Mathematical models, Simulation

50-4503
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Natural resources, Oceanography, Economic development, Environmental protection, Legislation, International cooperation, Arctic Ocean

50-4504
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Ecology, Limnology, Icebound lakes, Seasonal freeze thaw, Water temperature, Surface temperature, Biomass, Ice cover effect, Seasonal variations, Sampling, United States—Washington—Findley Lake

50-4505
Fluctuations of the Vestfonna Ice Margin, at Brageneset, Nordaustlandet, Svalbard, after the last glacial maximum.
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Ice edge, Moraines, Geochronology, Fossils, Shells, Norway—Svalbard

50-4506
Impact of Antarctica on surface air temperatures in the southern polar region. [Vliianie Antarktidy na prizemnuiu temperatury vozdukha iuzhnoĭ poliarnoĭ oblasti]
Liubarskiĭ, A.N., *Antarktika,* 1993, No.32, p.11-21, In Russian with English summary. 17 refs.
Air temperature, Topographic effects
The impact of physical and geographical conditions on the statistical structure of the southern polar region (SPR) temperature fields has been considered. To estimate this impact, an approach based on the selection of the type and parameters of the correlation function with different distances has been proposed. The analysis of spatial statistical structure of antarctic temperature fields has been made by means of characteristics of uniformity, stability and predictability allowing the relationship between the temperature and physical and geographical conditions to be established. It has been revealed that antarctic orography and the ice sheet both influence the temperature of the air. At the same time, zones with an extreme energy emission in the southern ocean affect the changes in the spatial correlation radius in warm and cold periods. (Auth.)

50-4507
Light dispersion and horizontal transparency in the surface boundary layer of the polar regions. [Ob osobennostiakh rasseianiia sveta i gorizontal'noĭ prozrachnosti v prizemnom sloe atmosfery poliarnykh raĭonov]
Sakunov, G.G., Barteneva, O.D., Kozlov, V.P., *Antarktika,* 1993, No.32, p.22-35, In Russian with English summary. 9 refs.
Atmospheric boundary layer, Visibility, Antarctica
The mean light dispersion indices in the absence of meteorological phenomena and in dense haze are presented from measurements in the surface boundary layer in the Arctic and Antarctic. The connection between the type of dispersion indices and the horizontal transparency of the atmosphere is investigated. A small parameter model for the analytical approximation of dispersion indices with a uniform accuracy of about 10% is proposed. (Auth.)

50-4508
Using group explosions on the surface of antarctic glaciers during deep seismic sounding research. [Opyt ispol'zovaniia gruppovykh vzryvov s poverkhnosti lednikov Antarktidy pri issledovaniiakh metodom GSZ]
Shumilov, A.V., *Antarktika,* 1993, No.32, p.36-40, In Russian with English summary. 3 refs.
Glacier ice, Snow, Seismic surveys, Antarctica
An original method for calculating group charges to induce seismic waves in loose snowy neve parts of antarctic glaciers is described. The experiments have shown that this method can provide a substantially increased intensity of useful seismic waves and determine the charge necessary for recording seismic waves at appropriate distances from the source. Following the given method, charges may be placed in shallow holes up to 15 m deep, substantially simplifying the complex technology of preparing powerful explosions on antarctic glaciers. This method can also be used in other parts of the world having unfavorable conditions for inducing seismic fluctuations due to loose sediments. (Auth.)

50-4509
Antarctic bottom topography and its representation on new bathymetric charts. [Rel'ef dna Antarktiki i ego izobrazhenie na novykh batimetricheskikh kartakh]
Marova, N.A., *Antarktika,* 1993, No.32, p.79-85, In Russian with English summary. 23 refs.
Oceanography, Tectonics, Bottom topography, Ocean bottom, Geological maps, —South Indian Ocean
A new set of bathymetric maps has been compiled based on a summary and analysis of the data available on the bottom topography of the Antarctic. The principal patterns of morphostructures and their genesis are discussed on the basis of the concept of plate tectonics. The heterogeneity and complex character of the morphology of the mid-oceanic ridge surrounding Antarctica are demonstrated. The patterns of bottom topography in the northern parts of the Subantarctic basins are closely related to the relief of the mid-oceanic ridges. The well-defined continuous ring of the mid-oceanic ridges is considered the natural boundary of the Antarctic. A new antarctic bathymetric map is presented. (Auth.)

50-4510
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Glacier surveys, Glaciation, Glacial geology, Ice sheets, Ice cores, Lake bursts, Quaternary deposits, Paleoclimatology, Research projects, Expeditions, Stations, China—Qinghai-Xizang Plateau, Antarctica
This paper summarizes the progress in glaciology and Quaternary glaciation research in China since 1978, including antarctic ice sheet research, ice core studies in the Tibetan Plateau, investigations on glacial lake outburst floods, debris flow and snow disasters in the Karakorum Mountains, the Himalayas etc., reconstruction of the Tianshan Glaciological Station and its main progress, glacier inventories and research on glacier meltwater resources, expeditions and a summary of regional glaciology, variations of seasonal snow distribution and meltwater, reconsiderations of the Quaternary glaciation and environment in East China, and advances in Quaternary glaciation research in West China and its disputation. (Auth.)

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50-4512
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Precipitation (meteorology), Air temperature, Atmospheric circulation, Atmospheric composition, Weather stations, Oxygen isotopes, Isotope analysis, Statistical analysis, China—Qinghai-Xizang Plateau

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Atmospheric circulation, Air temperature, Surface temperature, Wind (meteorology), Humidity, Radiation balance, Weather stations, China—Qinghai-Xizang Plateau

50-4514
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Ice cores, Firn stratification, Glacier ice, Ice structure, Ice microstructure, Ice crystal structure, Ice crystal size, Recrystallization, China—Kunlun Mountains

50-4515
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Soil freezing, Cryogenic soils, Soil structure, Frozen ground thermodynamics, Frost penetration, Freezing front, Soil water migration

50-4516
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Saline soils, Soil freezing, Frozen ground thermodynamics, Frozen ground compression, Frozen ground temperature, Unfrozen water content, Mathematical models

50-4518
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Mountain glaciers, Glacial geology, Glacial erosion, Glacier friction, Glacier beds, Striations, China—Tian Shan

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50-4522

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50-4523

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Arctic landscapes, Wetlands, Ecosystems, Plant ecology, Vegetation patterns, Biomass, Damage, Soil chemistry, Salinity, Environmental impact, Canada—Manitoba—La Pérouse Bay

50-4524

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Aircraft icing, Ice forecasting, Cloud physics, Supercooled clouds, Water content, Detection, Spacecraft, Radiometry, Accuracy

50-4525

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Atmospheric composition, Humidity, Water vapor, Dew point, Meteorological instruments, Sensors, Hygrometers, Lasers, Radiation absorption, Optical absorption, Cold weather performance, Cold weather tests, Design, Computer programs, Temperature effects

50-4526

Record of Early Pleistocene glaciation on the Mount Edziza Plateau, northwestern British Columbia.

Spooner, I.S., Osborn, G.D., Barendregt, R.W., Irving, E., *Canadian journal of earth sciences*, Dec. 1995, 32(12), p.2046-2056, With French summary. 19 refs.

Pleistocene, Glaciation, Glacial geology, Stratigraphy, Magma, Glacial deposits, Sampling, Geochronology, Geomagnetism, Canada—British Columbia—Edziza, Mount

50-4527

Ice-flow patterns and glacial transport in the eastern Hudson Bay region: implications for the late Quaternary dynamics of the Laurentide ice sheet.

Parent, M., Paradis, S.J., Boisvert, E., *Canadian journal of earth sciences*. Dec. 1995, 32(12), p.2057-2070, With French summary. 72 refs.

Ice sheets, Pleistocene, Glacier flow, Glacier oscillation, Orientation, Glacial erosion, Glacial geology, Stratigraphy, Bedrock, Striations, Geochronology, Canada—Quebec—Hudson Bay

50-4528

New sea-level curve from Nova Scotia: evidence for a rapid acceleration of sea-level rise in the late mid-Holocene.

Scott, D.B., Brown, K., Collins, E.S., Medioli, F.S., *Canadian journal of earth sciences*, Dec. 1995, 32(12), p.2071-2080, With French summary. 44 refs.

Paleoclimatology, Global warming, Ice melting, Marine geology, Bottom sediment, Lithology, Stratigraphy, Sea level, Periodic variations, Drill core analysis, Sampling, Radioactive age determination, Geochronology, Canada—Nova Scotia—Chezzetcook Inlet

50-4529

Arctic ozone hole—a myth or a possibility.

Singh, O.N., Fabian, P., *Speculations in science and technology*, Mar. 1995, 18(1), p.9-15, 30 refs.

Polar atmospheres, Cloud physics, Air pollution, Ozone, Photochemical reactions, Polar stratospheric clouds, Chemical properties, Aerosols, Atmospheric density, Cloud dissipation, Air temperature, Theories

50-4530

Vegetation and ecology of tropical mires in the high Andes of northern Chile. [Vegetation und Ökologie tropischer Hochgebirgsmoore in den Anden Nord-Chiles]

Ruthsatz, B., *Phytocoenologia*, June 26, 1995, 25(2), p.185-234, In German with English and French summaries. 51 refs.

Alpine landscapes, Soil water, Water chemistry, Plant ecology, Wetlands, Swamps, Mountain soils, Vegetation patterns, Classifications, Chile—Andes Mountains

50-4531

Changes in the physical state of model mixtures during freezing and drying: impact on product quality.

Shalaev, E.IU., Franks, F., *Cryobiology*, Feb. 1996, 33(1), p.14-26, 44 refs.

Cryobiology, Solutions, Frozen liquids, Ice sublimation, Freeze drying, Chemical properties, Phase transformations, Viscous flow, Stability, Thermal analysis, Temperature effects

50-4532

Use of confocal laser scanning microscope in conjunction with a conduction heat transfer stage in order to observe dynamically the freeze-thaw cycle in an autofluorescent substance and to measure ice crystal size *in situ*.

Evans, J., Adler, J., Mitchell, J., Blanshard, J., Rodger, G., *Cryobiology*, Feb. 1996, 33(1), p.27-33, 8 refs.

Cryobiology, Solutions, Frozen liquids, Ice physics, Freeze thaw cycles, Ice microstructure, Freezing front, Freezing rate, Ice crystal size, Lasers

50-4533

Natural convection for the melting of ice in porous media in a rectangular enclosure.

Chang, W.J., Yang, D.F., *International journal of heat and mass transfer*, July 1996, 39(11), p.2333-2348, 14 refs.

Ice physics, Ice melting, Phase transformations, Ice water interface, Convection, Porosity, Heat transfer, Isotherms, Temperature distribution, Mathematical models

50-4534

Asymptotic stability of the viscous-plastic sea ice rheology.

Schulkes, R.M.S.M., *Journal of physical oceanography*, Feb. 1996, 26(2), p.279-283, 7 refs.

Sea ice, Ice mechanics, Ice growth, Rheology, Ice plasticity, Viscosity, Stability, Phase transformations, Ice water interface, Ice models, Mathematical models, Statistical analysis

50-4535

1994-95 winter ice in the German coastal regions between the Ems and the Oder—with an overview of the entire Baltic Sea. [Der Eiswinter 1994/95 im deutschen Küstengebiet zwischen Ems und Oder—mit einer Übersicht für den gesamten Ostseeraum]

Strübing, K., *Deutsche hydrographische Zeitschrift*, 1995, 46(2), p.153-160, In German. 5 refs.

Sea ice distribution, Ice surveys, Seasonal variations, Shores, Ice volume, Ice cover thickness, Air ice water interaction, Air temperature, Correlation, Baltic Sea

50-4536

Ice conditions in Zalew Szczecinski (Stettiner Haff) during the winter 1994/95.

Schmelzer, N., Sztobryn, M., Stanislawczyk, I., *Deutsche hydrographische Zeitschrift*, 1995, 46(2), p.161-162.

Sea ice distribution, Ice conditions, Ice formation, Ice surveys, Seasonal variations, Baltic Sea

50-4537

Mass balance change as a control on the frequency and occurrence of glacier surges in Svalbard, Norwegian High Arctic.

Dowdeswell, J.A., Hodgkins, R., Nuttall, A.M., Hagen, J.O., Hamilton, G.S., *Geophysical research letters*, Nov. 1, 1995, 22(21), p.2909-2912, 19 refs.

Glacier surges, Glacier oscillation, Glacier mass balance, Climatic changes, Basal sliding, Global warming, Norway—Svalbard

50-4538

Behavior of the East Antarctic ice sheet as deduced from a coupled GCM/ice-sheet model.

Verbitskiĭ, M.IA., Saltzman, B., *Geophysical research letters*, Nov. 1, 1995, 22(21), p.2913-2916, 18 refs.

Ice sheets, Glacier oscillation, Stability, Global warming, Snow accumulation, Glacier thickness, Topographic features, Simulation

While the possible instability of the West Antarctic ice sheet has been widely recognized for some time as a potential source of sea-level rise in an enhanced greenhouse warming, the stability of the East Antarctic ice sheet has only recently become the subject of such a conjecture. This study uses a numerical experiment with an atmospheric general circulation model (GCM) coupled to a 3-dimensional ice-sheet model. Response of the ice sheet model to the external forcing generated by an atmospheric GCM due to doubling the CO_2 concentration does not show any appreciable changes in the horizontal extent of the ice sheet due to normal creep and topographic instabilities, suggesting that an antarctic collapse resulting from these factors is unlikely. The mechanics of basal sliding, nonisothermal effects, and ice shelves are as yet too poorly understood to make quantitative estimates of possible instabilities due to these processes. (Auth. mod.)

50-4539

UARS PSC, $ClONO_2$, HCl, and ClO measurements in early winter: additional verification of the paradigm for chlorine activation.

Geller, M.A., et al, *Geophysical research letters*, Nov. 1, 1995, 22(21), p.2937-2940, 16 refs.

Polar atmospheres, Remote sensing, Radiometry, Atmospheric composition, Aerosols, Chemical properties, Cloud physics, Polar stratospheric clouds, Heterogeneous nucleation, Photochemical reactions, Models

50-4540

Evidence for arctic ozone depletion in late February and early March 1994.

Manney, G.L., Zurek, R.W., Froidevaux, L., Waters, J.W., *Geophysical research letters*, Nov. 1, 1995, 22(21), p.2941-2944, 14 refs.

Polar atmospheres, Climatology, Radiometry, Atmospheric composition, Atmospheric density, Stratosphere, Ozone, Advection, Seasonal variations, Temperature effects

50-4541

Planetary waves in total ozone and their relation to antarctic ozone depletion.

Bodeker, G.E., Scourfield, M.W.J., *Geophysical research letters*, Nov. 1, 1995, 22(21), p.2949-2952, 24 refs.

Climatology, Polar atmospheres, Chemical properties, Stratosphere, Ozone, Air masses, Atmospheric circulation, Gravity waves, Models, Periodic variations

Recent studies have demonstrated the versatility of the Total Ozone Mapping Spectrometer (TOMS) data set in characterizing the behavior of Rossby-gravity waves. Similar analyses performed here are extended to relate interannual differences in Southern Hemisphere mid-latitude wave activity to the severity of the antarctic ozone depletion. Total ozone wave powers for wavenumber 1 to 6 have been calculated from TOMS distributions for each day from 1979 to 1992 and a mean measure of antarctic ozone depletion has been determined for each year. After normalization with respect to stratospheric chlorine loading, interannual differences in the severity of the antarctic ozone hole are anti-correlated with total wave powers. Furthermore, wintertime mean wave power and polar stratospheric temperatures are well correlated and appear to lag the equatorial Quasi-biennial Oscillation by 1 year. (Auth. mod.)

50-4542

Noctilucent cloud observations over Greenland by a Rayleigh lidar.

Thayer, J.P., Nielsen, N., Jacobsen, J., *Geophysical research letters*, Nov. 1, 1995, 22(21), p.2961-2964, 13 refs.

Polar atmospheres, Atmospheric boundary layer, Cloud physics, Lidar, Ice optics, Remote sensing, Sounding, Detection, Backscattering, Greenland

50-4543

Ground-penetrating radar investigation of the proposed dome-CARA tunnel route and utilities at South Pole Station, Antarctica.

Arcone, S.A., Tobiasson, W., Delaney, A.J., CR 95-24, *U.S. Army Cold Regions Research and Engineering Laboratory. Report*, Dec. 1995, 24p., ADA-306 940, 19 refs.

Radar echoes, Subsurface investigations, Remote sensing, Tunneling (excavation), Tunnels, Radar, Site surveys, Antennas, Antarctica—Amundsen-Scott Station

Ground-penetrating radar studies were performed at Amundsen-Scott Station during Jan. 1993 to determine if subsurface obstructions exist along a planned tunnel route from the main station to the new astrophysical research area on the far side of the skiway, and if various man-made subsurface features such as sewage sumps, a water well, utilidors and buried buildings could be located and delineated. The maximum depth of interest for the tunnel survey was approximately 10 m. For it, a short-pulse antenna transducer with its antenna bandwidth centered near 400 MHz was towed along the ground surface over multiple traverses to cover an area up to 60 m wide. The survey extended from the Amundsen-Scott Station fuel arch, across the skiway and then to the CARA site (Center for Astrophysical Research in Antarctica). The radar profiles show reflections from density layering within the snow caused by traffic and diffractions from artificial features within 13 m depth. Debris is present in the snow west of the skiway and near the fuel bladder near the taxiway. Targets within 100 m of the west side of the skiway are extensive, and appear to be metallic. The tunnel should be routed in the clear area north of them. Targets near the fuel bladder are only 3 to 4 m below the surface. The tunnel could go under them, but as a precaution they could be removed. An additional survey was run over a 30 m-wide swath from the ASTRO facility at the CARA site to the new elevated dormitory, a distance of approximately 800 m. (Auth. mod.)

50-4544

Temporal weather impacts upon exterior intrusion detection systems.

Ryerson, C.C., Peck, L., CR 95-25, *U.S. Army Cold Regions Research and Engineering Laboratory. Report*, Dec. 1995, 138p., ADA-306 810, Refs. passim.

Monitors, Warning systems, Countermeasures, Cold weather operation, Performance, Accuracy, Fog, Icing, Snow cover effect, Ice cover effect, Soil freezing, Soil water, Albedo, Solar radiation

Fundamentally, an electronic exterior intrusion detection system (IDS) cannot directly detect intruders; it detects a variation in the condition being monitored, extracts characteristics of that variation, and assesses whether such a variation probably is caused by an intruder. However, exterior IDSs do not operate in a benign natural environment. Their environment is constantly changing as a result of solar-driven energy and moisture fluxes that create the weather. These weather changes often cause variations in the conditions being monitored by IDSs. The challenge, therefore, is to recognize how and when IDSs are responding to some change in their natural environment rather than to intruders. This report is a technical analysis of causes of weather-driven temporal changes in the environment that impact the operational efficiency of IDSs. The report is intended to assist security designers in selecting suitable IDSs for a site and to assist security managers in operating IDSs at the required level of reliability. This is accomplished by identifying temporal variations in weather that are sufficiently general to be identified as patterns, and by identifying how different IDS phenomenologies respond to these patterns. The result is an understanding of how weather conditions influence the ability of types of IDSs to detect reliably activities representative of an intruder while successfully discriminating against weather-created conditions within a detection zone. The main body of the report is organized by temporal scale: diurnal, quasi-periodic, and seasonal. Within each temporal scale, weather processes common at that scale are explained. Topics covered include air and soil temperature, soil moisture, precipitation, snow cover, winds, fog, storms, urban and topographic effects, vegetation effects, and solar radiation.

50-4545

Object-GAWSER: object-oriented Guelph all-weather storm-event runoff model. Phase 1: training manual; application of object-oriented simulation to hydrologic modeling.

Hinckley, J.A., Jr., SR 96-04, *U.S. Army Cold Regions Research and Engineering Laboratory. Special report*, Feb. 1996, 55p., ADA-306 827, 14 refs.

Hydrology, Watersheds, Computer programs, Computerized simulation, Snowmelt, Runoff, Snow depth, Snow water content, Snowfall

Hydrologic models are currently used to understand the economic and ecological impacts of hydrologic processes. A new hydrologic model entitled Object-GAWSER was designed using an object-oriented platform to provide new insights into watershed hydrology. Object-GAWSER is a temperature index model that simulates upland watershed hydrology. Object-GAWSER is different from other hydrologic models in that each one of its components can be easily studied to understand its sensitivity to various inputs. First, this report will show how Object-GAWSER can be used to simulate the hydrologic behavior of forested, agricultural, and suburban watersheds. Second, the report will describe how Object-GAWSER was designed.

50-4546

Electromechanical phenomena in ice.

Petrenko, V.E., SR 96-02, *U.S. Army Cold Regions Research and Engineering Laboratory. Special report*, Feb. 1996, 30p., ADA-306 811, Refs. p.27-30.

Ice electrical properties, Ice mechanics, Ice physics, Ice cracks, Dielectric properties, Ice elasticity, Ice creep, Ice deformation

This report examines the electromechanical effects in ice. This group of physical phenomena, which has been found and studied relatively recently, broadens basic knowledge of ice and may have some practical applications. The electromechanical phenomena in this report are separated into three groups: 1) effects in which electromagnetic fields are generated by means of mechanical actions such as elastic stress, plastic strain, fracture or friction; 2) effects in which an application of electric fields modifies such mechanical properties of ice as its plasticity, elasticity and friction; 3) effects in which plastic strain changes electrical conductivity or dielectric permittivity of ice. Experimental results and theoretical models are discussed and some possible practical applications suggested.

50-4547

Obtaining and transferring soils for in-vial analysis of volatile organic compounds.

Hewitt, A.D., Lukash, N.J.E., SR 96-05, *U.S. Army Cold Regions Research and Engineering Laboratory. Special report*, Feb. 1996, 10p., ADA-306 918, 21 refs.

Soil analysis, Soil tests, Sampling, Laboratory techniques

The ability to retain volatile organic compounds (VOCs) while collecting and transferring intact soils for in-vial analysis was evaluated with field and laboratory samples. Experiments were designed to assess if VOC concentrations are maintained in an intact soil sample when 1) held for under an hour in a metal core liner, 2) held for days in a metal core liner sealed with TFE-fluorocarbon sheets or aluminum foil (ASTM D4547-91), 3) transferred to an empty vial to which a solvent was added later. Results indicate that these procedures are all highly susceptible to volatilization losses. To maintain site-representative VOC concentrations, collection of soil samples for in-vial analysis should occur within minutes of exposing a fresh surface by using a device that limits soil structure disruption and exposure.

50-4548

Hydrochemistry of remote high altitude lakes in the Himalayan region.

Gosso, E., Tartari, G., Valsecchi, S., Ramponi, S., Baudo, R., *International Association of Theoretical and Applied Limnology. Verhandlungen. Proceedings. Traveaux*, Dec.1993, 25(Part 2), p.800-803, Congress in Barcelona 1992. Edited for the Association by A. Sládečková. 9 refs.

DLC QH98.I5 v.25, pt.2 1992

Hydrogeochemistry, Limnology, Alpine landscapes, Lake water, Himalaya Mountains

50-4549

Prediction of the depth of frost penetration in West Virginia for pavement design purposes.

Moulton, L.K., *West Virginia State Road Commission. Report.*, Nov. 1968, No.7, Supplement, 351p. + append., 155 refs. Technical supplement to the final report for which see 38-617.

Pavements, Road icing, Subgrade soils, Soil freezing, Frost penetration, Frost forecasting, Road maintenance, Statistical analysis, Mathematical models, United States—West Virginia

50-4550

Flow and freezing boundary conditions for snowmelt infiltration into a frozen soil.

Tao, Y.X., Gray, D.M., ASME winter annual meeting, New Orleans, LA, Nov. 28-Dec. 3, 1993. Fluids Engineering Division, FED-Vol.173, Heat Transfer Division, HTD-Vol.265. Multiphase transport in porous media., New York, American Society of Mechanical Engineers, 1993, p.117-126, 13 refs.

DLC TA418.9.P6A44a 1993

Snow hydrology, Snowmelt, Snow cover effect, Seepage, Runoff forecasting, Frozen ground thermodynamics, Soil water migration, Mathematical models

50-4551

Report on establishing an interdisciplinary polar institute in Denmark. [Rapport om oprettelse af et tværfagligt polarinstitut i Danmark]

Denmark. Ministeriet for Grønland (Ministry for Greenland), Copenhagen, 1985, 88p. + appends., In Danish.

DLC G593.R37 1985

Research projects, Organizations, Regional planning, Cost analysis, Denmark, Greenland

50-4552

Beaufort Sea Planning Area Oil and Gas Lease Sale 144. Final environmental impact statement.

U.S. Department of the Interior. Minerals Management Service. Alaska Outer Continental Shelf Region, *Outer Continental Shelf environmental impact statement/environmental assessment (OCS EIS/EA)*, May 1996, MMS 96-0012, 2 vols., Refs. passim.

Offshore drilling, Exploration, Petroleum industry, Economic development, Oil spills, Environmental impact, Regional planning, United States—Alaska, Beaufort Sea

50-4553

Application of synthetic aperture radar (SAR) imagery on antarctic glaciology.

Takahashi, A., Fujii, Y., Cho, K., Nishio, F., Furukawa, T., Watanabe, O., *Antarctic record*, Nov. 1995, 39(3), p.205-232, In Japanese with English summary. 23 refs.

Airborne radar, Spaceborne photography, Imaging, Sea ice, Ice sheets, Mapping, Antarctica—Lützow-Holm Bay

Antarctic sea ice and ice sheets were studied using the ERS-1 and JERS-1 SAR images received at Showa Station in 1991-93. Analysis was mainly done for the sea ice in Lützow-Holm Bay, ice streams flowing into the bay, ice sheets near the coast and inland nunataks. Back-scattering coefficient of the SAR images differs clearly between first-year and multi-year sea ice covered with snow, which are difficult to be distinguished in the MOS-1/MESSR images. Weak scattering is confirmed in bare sea ice because of the smooth surface. (Auth. mod.)

50-4554

Meteorological observations at Syowa Station in 1992 by the 33rd Japanese Antarctic Research Expedition.

Matsuhara, K., Kojo, Y., Kishi, T., Igarashi, H., Higashijima, K., *Antarctic record*, Nov. 1995, 39(3), p.264-302, In Japanese with English summary. 7 refs.

Meteorological data, Meteorological instruments, Snowstorms, Snow cover distribution, Air temperature, Atmospheric pressure, Wind (meteorology), Radiation, Ozone, Aerosols, Antarctica—Showa Station

Results of meteorological observations carried out by JARE-33 from Feb. 1, 1992 to Jan. 31, 1993 at Showa Station are described. Blizzards were encountered 28 times spanning 60 days; two blizzards continued over 100 hours. During most of the time, it was cloudy and windy. Annual mean wind speed was 7.1 m/s, mean vapor pressure was 2.4 hPa, and mean cloud amount was 7.5. All of these values were maximum records. The antarctic ozone hole was observed

for four successive years. The lowest value of daily total ozone amount was 140 m atm-cm on Oct. 4 and the lowest of monthly mean was 164 m atm-cm in Oct. Both were the lowest values on record. (Auth. mod.)

50-4555

X-ray analysis of frozen clathrate hydrates. [Unstable intermediates in X-irradiated clathrate hydrates: ESR and ENDOR of tetramethylammonium hydroxide pentahydrate (TMNOH)]

Bednarek, J., Lund, A., Schlick, S., *Journal of physical chemistry,* Mar. 7, 1996, 100(10), p.3910-3916, 37 refs.

Cryogenics, Clathrates, Hydrates, Latticed structures, Molecular structure, Hydrogen bonds, Molecular energy levels, Proton transport, Hydrocarbons, Frozen liquids, Stability, X ray analysis, X ray diffraction, Spectra, Temperature effects

50-4556

Role of the large-scale Arctic Ocean circulation in the transport of contaminants.

Schlosser, P., Swift, J.H., Lewis, D., Pfirman, S.L., *Deep sea research II,* Nov. 1995, 42(6), p.1341-1367, 73 refs.

Oceanography, Ocean currents, Hydrography, Suspended sediments, Sediment transport, Water transport, Water pollution, Radioactive isotopes, Radioactive wastes, Environmental impact, Arctic Ocean

50-4557

Hydrographic structure and variability of the Kara Sea: implications for pollutant distribution.

Pavlov, V.K., Pfirman, S.L., *Deep sea research II,* Nov. 1995, 42(6), p.1369-1390, 42 refs.

Oceanography, Ocean currents, Watersheds, Water pollution, Hydrography, Radioactive wastes, Water transport, Ice rafting, Ice scoring, Drift, Ice cover effect, Environmental impact, Russia—Kara Sea

50-4558

Coastal environments of the western Kara and eastern Barents Seas.

Pfirman, S.L., Kögeler, J., Anselme, B., *Deep sea research II,* Nov. 1995, 42(6), p.1391-1412, 46 refs.

Oceanography, Shores, Spaceborne photography, Radiometry, Estuaries, Runoff, Water pollution, Sediment transport, Sea ice distribution, Fast ice, Ice cover effect, Ice water interface, Advection, Environmental impact, Barents Sea, Russia—Kara Sea

50-4559

Transfer of reprocessing wastes from north-west Europe to the Arctic.

Kershaw, P., Baxter, A., *Deep sea research II,* Nov. 1995, 42(6), p.1413-1448, Refs. p.1443-1448.

Oceanography, Ocean currents, Water pollution, Sampling, Radioactive wastes, Waste disposal, Radioactive isotopes, Water transport, Environmental impact, Barents Sea, Greenland Sea, Russia—Kara Sea, Arctic Ocean

50-4560

Radionuclide tracer profiles at the CESAR Ice Station and Canadian Ice Island in the western Arctic Ocean.

Smith, J.N., Ellis, K.M., *Deep sea research II,* Nov. 1995, 42(6), p.1449-1470, 46 refs.

Oceanography, Water pollution, Ocean currents, Radioactive isotopes, Fallout, Water transport, Advection, Ice islands, Sampling, Profiles, Environmental tests, Ice cover effect, Arctic Ocean

50-4561

Sedimentation and mixing rates of radionuclides in Barents Sea sediments off Novaya Zemlya.

Smith, J.N., Ellis, K.M., Naes, K., Dahle, S., Matisbov, D.G., *Deep sea research II,* Nov. 1995, 42(6), p.1471-1493, 52 refs.

Oceanography, Water pollution, Radioactive isotopes, Radioactive wastes, Fallout, Ocean currents, Bottom sediment, Suspended sediments, Sedimentation, Turbulent diffusion, Sampling, Environmental tests, Isotope analysis, Barents Sea

50-4562

Natural and anthropogenic radionuclide distributions in the Nansen Basin, Arctic Ocean: scavenging rates and circulation timescales.

Cochran, J.K., Hirschberg, D.J., Livingston, H.D., Buesseler, K.O., Key, R.M., *Deep sea research II,* Nov. 1995, 42(6), p.1495-1517, 47 refs.

Oceanography, Ocean currents, Scavenging, Water pollution, Turbulent diffusion, Radioactive isotopes, Radioactive wastes, Fallout, Sampling, Isotope analysis, Environmental tests, Arctic Ocean

50-4563

Distribution of ^{230}Th and ^{231}Pa in the water column in relation to the ventilation of the deep arctic basins.

Scholten, J.C., Van der Loeff, M.M.R., Michel, A., *Deep sea research II,* Nov. 1995, 42(6), p.1519-1531, 32 refs.

Oceanography, Radioactive isotopes, Distribution, Water transport, Ocean currents, Scavenging, Sampling, Isotope analysis, Advection, Arctic Ocean

50-4564

^{228}Ra as a tracer for shelf water in the Arctic Ocean.

Van der Loeff, M.M.R., Key, R.M., Scholten, J.C., Bauch, D., Michel, A., *Deep sea research II,* Nov. 1995, 42(6), p.1533-1553, 49 refs.

Oceanography, Water chemistry, Radioactive isotopes, Water transport, Advection, Sampling, Isotope analysis, Mass balance, Arctic Ocean

50-4565

Site studies of the ecological significance of periglacial loose rock materials of the Harz Mountains. [Untersuchungen zur standortökologischen Bedeutung der periglazialen Lockermaterialdecken des Harzes]

Frühauf, M., *Hallesches Jahrbuch für Geowissenschaften,* 1990, Band 15, p.103-115, In German with English and Russian summaries. 21 refs.

Periglacial processes, Plant ecology, Growth, Mountain soils, Rock properties, Sediment transport, Soil formation, Water balance, Lithology, Germany—Harz Mountains

50-4566

Snow crystal imaging using scanning electron microscopy: I. Precipitated snow.

Rango, A., Wergin, W.P., Erbe, E.F., *Hydrological sciences journal,* Apr. 1996, 41(2), p.219-233, 24 refs.

Snow physics, Precipitation (meteorology), Snow crystal structure, Classifications, Microstructure, Orientation, Scanning electron microscopy, Imaging, Laboratory techniques

50-4567

Snow crystal imaging using scanning electron microscopy: II. Metamorphosed snow.

Rango, A., Wergin, W.P., Erbe, E.F., *Hydrological sciences journal,* Apr. 1996, 41(2), p.235-250, 17 refs.

Snow physics, Snow hydrology, Snow cover structure, Metamorphism (snow), Snow crystal structure, Microstructure, Phase transformations, Classifications, Imaging, Scanning electron microscopy

50-4568

Free vibrations of a snowboard.

Sakata, T., Kawai, S., Kawada, F., *International journal of mechanical sciences,* June 1996, 38(6), p.579-588, 5 refs.

Skis, Design, Plates, Mechanical properties, Snow elasticity, Ice solid interface, Vibration, Performance, Elastic properties, Mathematical models, Simulation

50-4569

Arctic haze phenomenon.

Shaw, G.E., *American Meteorological Society. Bulletin,* Dec. 1995, 76(12), p.2403-2413, 71 refs.

Climatology, Global change, Polar atmospheres, Turbidity, Turbulent diffusion, Profiles, Chemical properties, Air pollution, Atmospheric composition, Haze, Aerosols, Origin, Environmental impact

50-4570

Modelling of permafrost depth in France during the last 120,000 years. [Modélisation de la profondeur du pergélisol au course du dernier cycle glaciaire en France]

Lebret, P., et al, *Bulletin de la Société Géologique de France,* 1996, 167(1), p.169-179, In French with English summary. 92 refs.

Pleistocene, Paleoclimatology, Geophysical surveys, Permafrost physics, Permafrost depth, Permafrost thickness, Frost penetration, Freezing front, Periglacial processes, Computerized simulation, Snow cover effect, France

50-4571

Retrieval of cloud microphysical properties using satellite measurements and an in situ data base.

Poix, C., Febvre, G., Fouilloux, A., Larsen, H., Gayet, J.F., *Annales geophysicae,* Jan. 1996, 14(1), p.98-106, 19 refs.

Cloud physics, Climatology, Precipitation (meteorology), Cloud cover, Classifications, Remote sensing, Radiometry, Water content, Ice crystals, Temperature effects, Statistical analysis

50-4572

Catching clouds.

Lachlan-Cope, T., *NERC news,* Apr. 1996, No.35, p.20-21.

Snow crystals, Clouds (meteorology), Snowflakes, Instruments, Antarctica—Antarctic Peninsula

The article explains the technology involved in catching a snowflake or a particle from a cloud in Antarctica, and bringing it back to England to study.

50-4573

Measuring the density of snow particles and snowfall rate.

Muramoto, K.I., Matsuura, K., Shiina, T., *Electronics and communications in Japan III,* Nov. 1995, 78(11), p.71-79, Translated from Denshi joho tsushin gakkai ronbushi, Dec. 1994. 17 refs.

Precipitation (meteorology), Snow physics, Falling snow, Snow density, Velocity measurement, Particle size distribution, Classifications, Imaging, Image processing, Data processing

50-4574

Boreal Ecosystem-Atmosphere Study (BOREAS): an overview and early results from the 1994 field year.

Sellers, P., et al, *American Meteorological Society. Bulletin,* Sep. 1995, 76(9), p.1549-1577, 21 refs.

Research projects, Global change, Climatology, Meteorological factors, Forest ecosystems, Geochemical cycles, Carbon dioxide, Soil air interface, Vapor transfer, Heat flux, Atmospheric composition, Vegetation patterns, Remote sensing, Snow hydrology, Canada—Manitoba, Canada—Saskatchewan

50-4575

110,000-yr record of explosive volcanism from the GISP2 (Greenland) ice core.

Zielinski, G.A., Mayewski, P.A., Meeker, L.D., Whitlow, S.I., Twickler, M.S., *Quaternary research,* Mar. 1996, 45(2), p.109-118, 49 refs.

Paleoclimatology, Quaternary deposits, Explosion effects, Volcanic ash, Aerosols, Ice sheets, Ice cores, Sampling, Ion density (concentration), Geochronology, Climatic factors, Greenland

50-4576

New radiocarbon dates for the Vedde ash and the Saksunarvatn ash from western Norway.

Birks, H.H., Gulliksen, S., Haflidason, H., Mangerud, J., Possnert, G., *Quaternary research,* Mar. 1996, 45(2), p.119-127, 34 refs.

Quaternary deposits, Stratigraphy, Sedimentation, Lacustrine deposits, Volcanic ash, Sampling, Geochemistry, Radioactive age determination, Geochronology, Norway

50-4577
Late stage 5 glacio-isostatic sea in the St. Lawrence Valley, Canada and the United States.
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Pleistocene, Paleoecology, Marine deposits, Quaternary deposits, Diagenesis, Sampling, Geochemistry, Age determination, Geochronology, United States—Alaska—Barrow, Norway—Spitsbergen

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Paleoecology, Pleistocene, Climatic changes, Forest ecosystems, Limnology, Palynology, Lacustrine deposits, Quaternary deposits, Stratigraphy, Drill core analysis, Radioactive age determination, United States—Alaska—Alaska Range

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Pleistocene, Glaciation, Glacial geology, Glacial deposits, Quaternary deposits, Sampling, Stratigraphy, Lithology, Soil classification, Magnetic properties, Correlation, United States—Illinois

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Paleoclimatology, Geochronology, Marine geology, Shores, Quaternary deposits, Marine deposits, Glacier oscillation, Glacial deposits, Sedimentation, Stratigraphy, Luminescence, Correlation, United States—Alaska

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Pleistocene, Paleoclimatology, Climatic changes, Atmospheric composition, Carbon dioxide, Geochemical cycles, Peat, Soil air interface, Vapor diffusion, Soil chemistry, Models

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Compositions containing ammonium salts and urea for melting of snow.
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Numerical solution of the two-dimensional transient temperature distribution with change of phase and bulk flow in porous media. Final report.
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U.S. Air Force, Wright-Patterson AFB, OH, Aug. 1973, 14p., Refs. passim.
Runways, Road icing, Chemical ice prevention, Military facilities, Road maintenance, Specifications

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Ice growth, Ice air interface, Ice water interface, Ice heat flux, Ice forecasting, Computerized simulation

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Selection of cold-tolerant plants for growth in soils contaminated with organics.
Rogers, H.B., Beyrouty, C.A., Nichols, T.D., Wolf, D.C., Reynolds, C.M., MP 3816, *Journal of soil contamination,* 1996, 5(2), p.171-186, 24 refs.
Soil pollution, Soil chemistry, Soil microbiology, Oil spills, Land reclamation, Introduced plants, Revegetation, Plant physiology, Growth, Acclimatization, Cold tolerance
A mixture of organic chemicals (MOC) containing equal molar amounts of benzoic acid, hexadecane, 2,2-dimethyl 4,*n*-propyl-benzene, phenanthrene, pyrene, and either cycloheptane or *cis*-decahydronaphthalene (*cis*-decalin) was applied to soil at rates of 0 to 8000 mg/kg. In a plant-screening experiment, growth responses of four legume and five nonlegume species were determined at 10 and 25°C. The MOC applied at 2000 mg/kg reduced the growth of several species without resulting in significant seedling death. At 10°C, the growth of alpine bluegrass *(Poa alpina* L.) in the 1000 and 2000 mg/kg treatments of soil increased by more than 185%. In a plant growth response experiment, alpine bluegrass and alfalfa *(Medicago sativa* L.) were grown in soil that had been contaminated at rates of 0 and 2000 mg/kg. At 14 weeks, the shoot and root dry weights of alfalfa were 97% lower in the contaminated soil, while the shoot dry weight, root dry weight, and root length of alpine bluegrass were 135, 235, and 268% higher, respectively. Except for pyrene, <23% of the compounds comprising the MOC remained in the soil after 4 weeks and <5% after 14 weeks. The disappearnce of the MOC was not significantly influenced by the presence of alfalfa or alpine bluegrass.

50-4610
Winter methane dynamics beneath ice and in snow in a temperate poor fen.
Melloh, R.A., Crill, P.M., MP 3817, *Hydrological processes,* 1995, Vol.9, p.947-956, 22 refs. For another version see 50-3127.
Wetlands, Peat, Soil chemistry, Soil air interface, Snowfall, Snow composition, Snow cover effect, Snow air interface, Nutrient cycle
The influence of winter on methane (CH_4) stored in pore water and emitted through snow was investigated in a temperate poor fen in New Hampshire over two winters. Methane accumulated beneath ice layers (1 cm) deposited by freezing rain, resulting in snow-pore air mixing ratios as high as 140 ppmv during the first winter and 600 ppmv during the second. An early winter snow crust of 300 kg/m^3 caused no discontinuity in a linear mixing ratio profile and therefore was not observed to retard snowpack emissions. Methane concentration-depth profiles in pore water steepened and concentrations increased by as much as 400 μm at the 10 and 20 cm depths as the ice cover formed. This suggests that the peat-ice cover plays an important part in CH_4 build-up in pore water by limiting the transport of gases between the peat and the atmosphere. Pore water concentrations gradually declined through late winter. The seasonality of dissolved CH_4 in pore water over two winters and one summer showed an average annual amplitude of 1.3 g CH_4/m^2 (25-75 cm depth range), with a winter maximum of 4.7 g CH_4/m^2. Emissions during the winter with average snowfall accounted for a larger percentage (9.2% in 1993-94) of total annual emission than the winter with below-average snowfall and warmer air temperature (2% in 1994-95). Emissions averaged 56 and 26 mg/m^2/day during the first and second winter (Dec., Jan. and Feb.), respectively.

50-4611
Combined RO/freezing system to reduce inland rejected brine.
Madani, A.A., Aly, S.E., *Desalination,* 1989, Vol.75, p.241-258, 17 refs.
Artificial freezing, Water treatment, Brines, Desalting, Cost analysis, Mathematical models

50-4612
Snow survey bulletin & water supply forecast, May 1, 1996, Yukon Territory.
Canada. Indian and Northern Affairs. Water Resources Division, Whitehorse, 1996, 27p.
Snow surveys, Runoff forecasting, Snow depth, Snow water equivalent, Stream flow, Canada—Yukon Territory

50-4613
Relationships among morphological status, steroid hormones, and post-thawing viability of frozen spermatozoa of male minke whales *(Balaenoptera acutorostrata).*
Fukui, Y., et al, *Marine mammal science,* Jan. 1996, 12(1), p.28-37, Refs. p.35-37.
Cryobiology, Cryogenics, Marine biology
Spermatozoa from 21 mature minke whales taken in the antarctic ocean for Japanese research were recovered from vasa deferentia. diluted 1:9 in a Tris-based diluent, and frozen at -80°C on board the vessel. After a period ranging from 45 to 125 d, the samples were transferred to liquid nitrogen and transported to the laboratory. After thawing at 37°C, the motility (percentage of motile spermatozoa), vitality (proportion of live spermatozoa), and sperm concentration were determined for each sample. These values were tested for correlations with morphological measurements (body size, body weight, testis weight) and serum concentrations of progesterone (P_4), estradiol-17β (E_2), and testosterone (T). Ten of 21 samples had motile spermatozoa (2-40%). Although no motile spermatozoa were observed in 11 samples, all sperm samples were examined by eosin-nigrosin staining and showed vitality levels of 3-44%. It was found that the motility (r=0.54) and vitality (r=0.53) of the spermatozoa were significantly (P<0.01) correlated with the E_2 levels. Serum T levels were significantly correlated with the E_2 levels (r=0.58, P<0.01), but sperm concentrations were not correlated with either E_2 or T levels. The present study demonstrates that spermatozoa of minke whales can be successfully cryopreserved. (Auth.)

50-4614
Snow.
Colbeck, S.C., MP 3818, Encyclopedia of climate and weather. Vol.2. Edited by S.H. Schneider, New York, Oxford University Press, 1996, p.697-699, 4 refs.
Snow physics, Dictionaries, Snow hydrology, Climatology, Snow cover effect, Snow cover structure, Physical properties, Chemical properties, Ice water interface

50-4615
Snow cover.
Colbeck, S.C., MP 3819, Encyclopedia of climate and weather. Vol.2. Edited by S.H. Schneider, New York, Oxford University Press, 1996, p.699-700, 3 refs.
Climatology, Dictionaries, Snow cover distribution, Snow cover structure, Snow cover effect, Snow thermal properties, Insulation

50-4616
Frost action in subgrade soils—a field/laboratory study.
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Subgrade soils, Frost action, Frost penetration, Frost resistance, Freezing indexes, Soil tests, Subgrade maintenance, Road maintenance

50-4617
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50-4618
Smart skis and other adaptive structures.
Ashley, S., *Mechanical engineering,* Nov. 1995, 117(1), p.77-81.
Skis, Tensile properties, Performance, Design, Composite materials, Ceramics, Sensors, Electric fields, Polarization (charge separation), Ice solid interface, Vibration, Attenuation

50-4619
Automated aircraft icing forecast technique project report.
Mansur, M.V., U.S. Air Force. Air Weather Service. Global Weather Central. Report PR/84-001, May 1984, 24p. + appends., 15 refs.
Aircraft icing, Ice forecasting, Cloud physics, Computerized simulation, Computer programs, Accuracy, Meteorological factors, Synoptic meteorology

50-4620
Scientist joins elite group.
Darling, M., MP 3820, *U.S. Army Corps of Engineers. Engineer update,* May 1996, 20(5), p.4.
Glaciology, Research projects

50-4621
Ice passage. *U.S. Army Corps of Engineers. Engineer update,* May 1996, 20(5), p.7.
Research projects, Locks (waterways), Lake ice, Ice passing, Water intakes, Hydraulic structures, Design, Simulation

50-4622

Flux and fluence of major solar proton events and their record in antarctic snow.

Shea, M.A., Smart, D.F., Dreschhoff, G.A.M., Zeller, E.J., *Phillips Lab/GPSG. Technical report,* Mar. 1994, PL-TR-94-2061, 5p., ADA-277 485, Reprint from 23rd International Cosmic Ray Conference, Conference Papers, 3, 846-849, 1993.

Solar activity, Protons, Geomagnetism, Ice composition, Snow composition, Measurement

A study of the major solar proton events since 1955 has shown that the large fluence events are likely to be associated with a solar flare source near the central meridian of the sun, while events with large peak proton-flux are likely to be associated with solar flares near the west limb of the sun. The authors compare the solar proton events to the measurements of nitrate concentrations in the antarctic ice and find that the largest concentrations are associated with the major fluence events. From these results, they are able to assign a probable solar proton event source to three of the major peaks in the nitrate record prior to 1955. (Auth.)

50-4623

Proceedings.

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Snow mechanics, Ice mechanics, Ice physics, Sea ice, Snow electrical properties, Thermodynamic properties, Dynamic properties, Snow optics, Snow crystal structure, Metamorphism (snow), Ice cracks, Ice models, Ice strength, Measuring instruments

50-4624

Review of multi-proxy data for the Younger Dryas in Atlantic Canada.

Mayle, F.E., Cwynar, L.C., *Quaternary science reviews,* Nov. 1995, 14(9), p.813-821, 37 refs.

Paleoclimatology, Pleistocene, Climatic changes, Paleoecology, Palynology, Glacial deposits, Quaternary deposits, Lacustrine deposits, Stratigraphy, Radioactive age determination, Geochronology, Canada—Newfoundland, Canada—Nova Scotia

50-4625

Potential glacial evidence for the Younger Dryas event in the Cordillera of North and South America.

Osborn, G.D., et al, *Quaternary science reviews,* Nov. 1995, 14(9), p.823-832, 47 refs.

Paleoclimatology, Climatic changes, Pleistocene, Alpine glaciation, Quaternary deposits, Glacial deposits, Moraines, Geochronology, Radioactive age determination, Correlation

50-4626

Propagation of sound from a moving airborne source in an ice-covered ocean.

Grudskiĭ, S.M., Obrezanova, O.A., Rabinovich, V.S., *Acoustical physics,* Mar.-Apr. 1996, 42(2), p.166-171, Translated from Akusticheskiĭ zhurnal. 12 refs.

Oceanography, Ice surveys, Aerial surveys, Sound waves, Underwater acoustics, Wave propagation, Ice air interface, Ice cover effect, Ice cover thickness, Mathematical models

50-4627

Sound reflection from ice cover.

Kudriashov, V.M., *Acoustical physics,* Mar.-Apr. 1996, 42(2), p.215-221, Translated from Akusticheskiĭ zhurnal. 11 refs.

Ice water interface, Ice air interface, Ice sheets, Ice acoustics, Sound waves, Reflectivity, Wave propagation, Scattering, Surface roughness, Ice cover effect, Mathematical models, Attenuation

50-4629

Mean wind patterns and snow depths in an alpine-subalpine ecosystem as measured by damage to coniferous trees.

Wooldridge, G.L., Musselman, R.C., Sommerfeld, R.A., Fox, D.G., Connell, B.H., *Journal of applied ecology,* Feb. 1996, 33(1), p.100-108, 22 refs.

Plant ecology, Alpine landscapes, Ecosystems, Alpine landscapes, Trees (plants), Plant tissues, Deformation, Turbulent flow, Wind direction, Wind velocity, Topographic effects, Snow depth, Correlation

50-4630

Soil development on Late Pleistocene moraines at Pine Creek, east-central Sierra Nevada, California.

Bach, A.J., Elliott-Fisk, D.L., *Physical geography,* Jan.-Feb. 1996, 17(1), p.1-28, Refs. p.25-28.

Pleistocene, Alpine glaciation, Glacial geology, Glacial deposits, Moraines, Soil formation, Mountain soils, Stratigraphy, Soil profiles, Geochronology, Radioactive age determination, Correlation, United States—California—Sierra Nevada

50-4631

Thermally driven sorption, desorption, and moisture migration in the active layer in central Alaska.

Outcalt, S.I., Hinkel, K.M., *Physical geography,* Jan.-Feb. 1996, 17(1), p.77-90, 20 refs.

Permafrost physics, Active layer, Soil freezing, Freezing front, Frost penetration, Freeze thaw cycles, Soil water migration, Solubility, Vapor transfer, Thermal diffusion, Snow cover effect, Temperature measurement

50-4632

Position measurements during the 1959 International Glaciological Expedition in Greenland. [Lagemessungen bei der International Glaziologischen Grönland-Expedition (EGIG) 1959]

Hofmann, W., *Zeitschrift für Vermessungswesen,* 1958, 83(7-9), p.1-7, In German. 7 refs.

Glaciology, Ice sheets, Glacier surveys, Geodetic surveys, Topographic features, Greenland

50-4633

Straight line measurements of an open four-sided figure. [Die freie Diagonalen-Viereckskette mit direkt gemessenen Strecken]

Hofmann, W., *Zeitschrift für Vermessungswesen,* 1958, 83(7-9), p.8-16, 13 refs.

Glaciology, Glacier surveys, Ice sheets, Surface structure, Geodetic surveys, Orientation, Analysis (mathematics), Simulation, Greenland

50-4634

Airborne lidar observations of arctic polar stratospheric clouds: indications of two distinct growth stages.

Poole, L.R., McCormick, M.P., *Geophysical research letters,* Jan. 1988, 15(1), p.21-23, 15 refs.

Polar atmospheres, Aerial surveys, Climatology, Cloud physics, Polar stratospheric clouds, Lidar, Backscattering, Freezing points, Condensation, Heterogeneous nucleation, Ice formation, Temperature effects

50-4635

Chernobyl radioactivity found in mid-water sediment interceptors in the N. Pacific and Bering Sea.

Kusakabe, M., Ku, T.L., Harada, K., Taguchi, K., Tsunogai, S., *Geophysical research letters,* Jan. 1988, 15(1), p.44-47, 23 refs.

Oceanography, Water pollution, Suspended sediments, Mass transfer, Fallout, Radioactive isotopes, Isotope analysis, Environmental tests, Environmental impact, Bering Sea

50-4636

O_3 and NO_2 ground-based measurements by visible spectrometry during arctic winter and spring 1988.

Pommereau, J.P., Goutail, F., *Geophysical research letters,* Aug. 1988, 14(8), p.891-894, 15 refs.

Polar atmospheres, Climatic changes, Atmospheric composition, Chemical composition, Sounding, Spectroscopy, Ozone, Seasonal variations, Diurnal variations, Photochemical reactions, Vapor diffusion, Temperature effects

50-4637

Evaluation of the Bridger Range winter cloud seeding experiment using control gages.

Super, A.B., Heimbach, J.A., Jr., *Journal of climate and applied meteorology,* Dec. 1983, 22(12), p.1989-2011, 49 refs.

Precipitation (meteorology), Weather modification, Cloud seeding, Snowfall, Snow water equivalent, Ice nuclei, Heterogeneous nucleation, Silver iodide, Statistical analysis, Accuracy, Precipitation gages, United States—Montana—Bridger Range

50-4638

On a sampling error in hailpad measurements.

Wirth, E., Zoltán, C., Székely, C., *Journal of climate and applied meteorology,* Dec. 1983, 22(12), p.2100-2102, 7 refs.

Precipitation (meteorology), Hail, Sampling, Precipitation gages, Sensors, Impact, Distribution, Statistical analysis, Accuracy

50-4639

Attenuation of microwaves by spherical hail.

Battan, L.J., Bohren, C.F., *Journal of climate and applied meteorology,* Aug. 1986, 25(8), p.1155-1159, 15 refs.

Precipitation (meteorology), Hailstone structure, Spongy ice, Radar echoes, Detection, Backscattering, Attenuation, Ice crystal optics, Analysis (mathematics)

50-4640

Contribution of scientific research to safety with snow, ice and avalanche. Proceedings of the seminar, Chamonix, France, May 30-June 3, 1995. [Les apports de la recherche scientifique à la sécurité neige, glace et avalanche. Actes de colloque]

Sivardière, F., ed, Grenoble, France, ANENA (Association Nationale pour l'Étude de la Neige et des Avalanches), 1995, 370p., In French and English. Refs. passim. For individual papers see 50-4641 through 50-4693.

Avalanches, Avalanche forecasting, Avalanche modeling, Avalanche mechanics, Avalanche formation, Avalanche triggering, Avalanche tracks, Avalanche deposits, Snow cover stability, Safety

50-4641

Avalanche accidents in France from 1971 to 1974. [Évolution des accidents d'avalanches en France de 1971 à 1994]

Sivardière, F., Valla, F., Les apports de la recherche scientifique à la sécurité neige, glace et avalanche. Actes de colloque (Contribution of scientific research to safety with snow, ice and avalanche. Proceedings of the seminar, Chamonix, France, May 30-June 3, 1995). Edited by F. Sivardière, Grenoble, France, ANENA (Association Nationale pour l'Étude de la Neige et des Avalanches), 1995, p.13-18, In French with English summary. 2 refs.

Avalanches, Accidents, Statistical analysis, France

50-4642

Seismic detection in classifying avalanches. [Détection sismique appliquée à la caractérisation des avalanches]

Sabot, F., Martinez, P., Suriñach, E., Olivera, C., Gavaldà, J., Les apports de la recherche scientifique à la sécurité neige, glace et avalanche. Actes de colloque (Contribution of scientific research to safety with snow, ice and avalanche. Proceedings of the seminar, Chamonix, France, May 30-June 3, 1995). Edited by F. Sivardière, Grenoble, France, ANENA (Association Nationale pour l'Étude de la Neige et des Avalanches), 1995, p.19-24, In French with English summary. 4 refs.

Avalanches, Avalanche forecasting, Snow cover stability, Snowquakes, Snow acoustics, Weather stations, Seismic surveys, Data transmission, Spain—Pyrenees

50-4643

Analysis from concentration profiles, of particle characteristics affecting the transport of snow by wind. [Analyse des caractéristiques des particules influençant le transport de la neige par le vent à partir des profils de concentration]

Martinez, H., Naaim, M., Roussel, M., Les apports de la recherche scientifique à la sécurité neige, glace et avalanche. Actes de colloque (Contribution of scientific research to safety with snow, ice and avalanche. Proceedings of the seminar, Chamonix, France, May 30-June 3, 1995). Edited by F. Sivardière, Grenoble, France, ANENA (Association Nationale pour l'Étude de la Neige et des Avalanches), 1995, p.25-30, In French with English summary. 8 refs.

Blowing snow, Snow erosion, Wind erosion, Particle size distribution

50-4644

Numerical model of powder snow avalanche: theoretical analysis and application.

Naaim, M., Les apports de la recherche scientifique à la sécurité neige, glace et avalanche. Actes de colloque (Contribution of scientific research to safety with snow, ice and avalanche. Proceedings of the seminar, Chamonix, France, May 30-June 3, 1995). Edited by F. Sivardière, Grenoble, France, ANENA (Association Nationale pour l'Étude de la Neige et des Avalanches), 1995, p.31-36, With French summary. 6 refs.

Avalanche modeling, Avalanche mechanics, Avalanche forecasting, Snow cover stability

50-4645

Council of Europe's Open Partial Agreement on Major Hazards, EUR-OPA. [L'accord du Conseil de l'Europe "Eur-Opa risques majeurs"]

Tondre, F., Les apports de la recherche scientifique à la sécurité neige, glace et avalanche. Actes de colloque (Contribution of scientific research to safety with snow, ice and avalanche. Proceedings of the seminar, Chamonix, France, May 30-June 3, 1995). Edited by F. Sivardière, Grenoble, France, ANENA (Association Nationale pour l'Étude de la Neige et des Avalanches), 1995, p.37-42, In French with English summary.

Avalanche forecasting, Slope stability, Landslides, Accidents, Rescue operations, Safety, Data transmission, International cooperation

50-4646

Test of the snow cover numerical model CROCUS under a transitional snow climate with regards to operational avalanche forecasting.

Mingo, L., Les apports de la recherche scientifique à la sécurité neige, glace et avalanche. Actes de colloque (Contribution of scientific research to safety with snow, ice and avalanche. Proceedings of the seminar, Chamonix, France, May 30-June 3, 1995). Edited by F. Sivardière, Grenoble, France, ANENA (Association Nationale pour l'Étude de la Neige et des Avalanches), 1995, p.43-48, With French summary. 4 refs.

Avalanche forecasting, Snow cover stability, Snow depth, Snow density, Snow temperature, Metamorphism (snow), Depth hoar, Computerized simulation

50-4647

Modeling the spatial distribution of wind-transported snow in the ELSA system. [Modélisation de la répartition spatiale de la neige transportée par le vent dans le système ELSA]

Mases, M., Buisson, L., Frey, W., Les apports de la recherche scientifique à la sécurité neige, glace et avalanche. Actes de colloque (Contribution of scientific research to safety with snow, ice and avalanche. Proceedings of the seminar, Chamonix, France, May 30-June 3, 1995). Edited by F. Sivardière, Grenoble, France, ANENA (Association Nationale pour l'Étude de la Neige et des Avalanches), 1995, p.49-54, In French with English summary. 5 refs.

Avalanche modeling, Avalanche tracks, Avalanche erosion, Avalanche deposits, Snow erosion, Snowdrifts, Computerized simulation

50-4648

Model of powder snow avalanches.

Gauer, P., Les apports de la recherche scientifique à la sécurité neige, glace et avalanche. Actes de colloque (Contribution of scientific research to safety with snow, ice and avalanche. Proceedings of the seminar, Chamonix, France, May 30-June 3, 1995). Edited by F. Sivardière, Grenoble, France, ANENA (Association Nationale pour l'Étude de la Neige et des Avalanches), 1995, p.55-61, With French summary. 7 refs.

Avalanche modeling, Avalanche mechanics, Avalanche erosion, Avalanche tracks, Avalanche deposits, Snow erosion, Snow loads, Mathematical models

50-4649

Calculation methods for avalanche run-out distance for the Austrian Alps.

Lied, K., Weiler, C., Bakkebøi, S., Hopf, J., Les apports de la recherche scientifique à la sécurité neige, glace et avalanche. Actes de colloque (Contribution of scientific research to safety with snow, ice and avalanche. Proceedings of the seminar, Chamonix, France, May 30-June 3, 1995). Edited by F. Sivardière, Grenoble, France, ANENA (Association Nationale pour l'Étude de la Neige et des Avalanches), 1995, p.63-68, With French summary. 10 refs.

Avalanche modeling, Avalanche mechanics, Avalanche tracks, Avalanche deposits, Avalanche forecasting, Statistical analysis

50-4650

Seismic detection of avalanches: concept and validation of a pre-operational system. [Détection sismique des avalanches: conception et validation d'un système pré-opérationnel]

Lepretre, B., Navarre, J.P., Danielou, Y., Panel, J.M., Taillefer, A., Les apports de la recherche scientifique à la sécurité neige, glace et avalanche. Actes de colloque (Contribution of scientific research to safety with snow, ice and avalanche. Proceedings of the seminar, Chamonix, France, May 30-June 3, 1995). Edited by F. Sivardière, Grenoble, France, ANENA (Association Nationale pour l'Étude de la Neige et des Avalanches), 1995, p.69-74, In French with English summary. 10 refs.

Avalanche forecasting, Avalanche formation, Snow cover stability, Snowquakes, Snow acoustics, Seismic surveys

50-4651

Imaging techniques for mapping the surface velocities of a dense snow avalanche. [Utilisation des techniques d'imagerie pour la cartographie des vitesses à la surface d'une avalanche de neige dense]

Granada, F., Villemain, P., Marco, O., Les apports de la recherche scientifique à la sécurité neige, glace et avalanche. Actes de colloque (Contribution of scientific research to safety with snow, ice and avalanche. Proceedings of the seminar, Chamonix, France, May 30-June 3, 1995). Edited by F. Sivardière, Grenoble, France, ANENA (Association Nationale pour l'Étude de la Neige et des Avalanches), 1995, p.75-81, In French with English summary. 4 refs.

Avalanche modeling, Avalanche mechanics, Photographic techniques, Image processing

50-4652

Modeling of powder snow avalanches: possibilities for use in regulatory zoning of natural hazards. [Modélisation des avalanches poudreuses: possibilités d'utilisation dans le cadre d'un zonage réglementaire des risques naturels]

Bouvet, P., Cassayre, Y., Charlier, C., Marco, O., Naaim, M., Les apports de la recherche scientifique à la sécurité neige, glace et avalanche. Actes de colloque (Contribution of scientific research to safety with snow, ice and avalanche. Proceedings of the seminar, Chamonix, France, May 30-June 3, 1995). Edited by F. Sivardière, Grenoble, France, ANENA (Association Nationale pour l'Étude de la Neige et des Avalanches), 1995, p.83-88, In French with English summary. 4 refs.

Avalanche modeling, Avalanche forecasting, Mapping, Safety, Regional planning

50-4653

Snow hazard information system in Slovenia.

Horvat, A., Les apports de la recherche scientifique à la sécurité neige, glace et avalanche. Actes de colloque (Contribution of scientific research to safety with snow, ice and avalanche. Proceedings of the seminar, Chamonix, France, May 30-June 3, 1995). Edited by F. Sivardière, Grenoble, France, ANENA (Association Nationale pour l'Étude de la Neige et des Avalanches), 1995, p.89-95, With French summary. 3 refs.

Snow surveys, Snow cover distribution, Snow cover stability, Avalanche forecasting, Regional planning, Data processing, Slovenia

50-4654

PROTEON—a model for local forecasting of blowing snow. [PROTÉON—Vers une prévision locale du transport de neige par le vent]

Guyomarc'h, G., Merindol, L., Les apports de la recherche scientifique à la sécurité neige, glace et avalanche. Actes de colloque (Contribution of scientific research to safety with snow, ice and avalanche. Proceedings of the seminar, Chamonix, France, May 30-June 3, 1995). Edited by F. Sivardière, Grenoble, France, ANENA (Association Nationale pour l'Étude de la Neige et des Avalanches), 1995, p.97-102, In French with English summary. 6 refs.

Blowing snow, Snow erosion, Snow cover stability, Avalanche forecasting, Statistical analysis, Computerized simulation

50-4655

Elaboration of a cadastre of avalanche paths in the Catalan Pyrenees.

Marti, G., Oller, P., Bisson, B., Gavaldà, J., Garcia, J., Martinez, P., Les apports de la recherche scientifique à la sécurité neige, glace et avalanche. Actes de colloque (Contribution of scientific research to safety with snow, ice and avalanche. Proceedings of the seminar, Chamonix, France, May 30-June 3, 1995). Edited by F. Sivardière, Grenoble, France, ANENA (Association Nationale pour l'Étude de la Neige et des Avalanches), 1995, p.103-108, With French summary. 14 refs.

Avalanche forecasting, Avalanche tracks, Avalanche deposits, Mapping, Data processing, Regional planning, Spain—Pyrenees

50-4656

Avalanche bulletin and computer aided communication: preliminary results. [Bulletin avalanche et communication assistée par ordinateur: premières réalisations]

Bolognesi, R., Guillaud, F., Les apports de la recherche scientifique à la sécurité neige, glace et avalanche. Actes de colloque (Contribution of scientific research to safety with snow, ice and avalanche. Proceedings of the seminar, Chamonix, France, May 30-June 3, 1995). Edited by F. Sivardière, Grenoble, France, ANENA (Association Nationale pour l'Étude de la Neige et des Avalanches), 1995, p.109-117, In French with English summary. 5 refs.

Avalanche forecasting, Warning systems, Safety, Data processing, Data transmission

50-4657

Local forecasting of avalanche hazard in La Plagne. [Prévision locale du risque d'avalanches à La Plagne]

Schneider, C., Les apports de la recherche scientifique à la sécurité neige, glace et avalanche. Actes de colloque (Contribution of scientific research to safety with snow, ice and avalanche. Proceedings of the seminar, Chamonix, France, May 30-June 3, 1995). Edited by F. Sivardière, Grenoble, France, ANENA (Association Nationale pour l'Étude de la Neige et des Avalanches), 1995, p.119-122, In French with English summary.

Avalanche forecasting, Warning systems, Safety, Computer applications, Data transmission, France

50-4658

Spatial and time variability of avalanche predictors and accuracy of their estimation.

Chernous, P.A., Les apports de la recherche scientifique à la sécurité neige, glace et avalanche. Actes de colloque (Contribution of scientific research to safety with snow, ice and avalanche. Proceedings of the seminar, Chamonix, France, May 30-June 3, 1995). Edited by F. Sivardière, Grenoble, France, ANENA (Association Nationale pour l'Étude de la Neige et des Avalanches), 1995, p.123-128, With French summary. 6 refs.

Avalanche forecasting, Snow depth, Snow density, Snow cover stability, Statistical analysis

50-4659

Swiss concept for forecasting the danger of avalanches. [Concept suisse pour la prévision du danger d'avalanches]

Ammann, W.J., Les apports de la recherche scientifique à la sécurité neige, glace et avalanche. Actes de colloque (Contribution of scientific research to safety with snow, ice and avalanche. Proceedings of the seminar, Chamonix, France, May 30-June 3, 1995). Edited by F. Sivardière, Grenoble, France, ANENA (Association Nationale pour l'Étude de la Neige et des Avalanches), 1995, p.129-132, In French with English summary.

Avalanche forecasting, Warning systems, Safety, Data transmission, Switzerland

50-4660

Avalanche activity during major avalanche events, a case study for hydroelectric reservoirs.

Schaer, M., Les apports de la recherche scientifique à la sécurité neige, glace et avalanche. Actes de colloque (Contribution of scientific research to safety with snow, ice and avalanche. Proceedings of the seminar. Chamonix, France, May 30-June 3, 1995). Edited by F. Sivardière, Grenoble, France, ANENA (Association Nationale pour l'Étude de la Neige et des Avalanches), 1995, p.133-138, With French summary. 7 refs.

Avalanche forecasting, Avalanche tracks, Avalanche deposits, Reservoirs, Flood control, Statistical analysis, Switzerland

50-4661

Local forecasting of avalanche hazards at Alpe d'Huez in the Grandes Rousses. [Prévision locale du risque d'avalanches Alpe d'Huez, domaine des Grandes Rousses]

Daultier, J.M., Les apports de la recherche scientifique à la sécurité neige, glace et avalanche. Actes de colloque (Contribution of scientific research to safety with snow, ice and avalanche. Proceedings of the seminar, Chamonix, France, May 30-June 3, 1995). Edited by F. Sivardière, Grenoble, France, ANENA (Association Nationale pour l'Étude de la Neige et des Avalanches), 1995, p.139-143, In French with English summary.

Avalanche forecasting, Safety, Warning systems, Data transmission, France

50-4662

MEPRA and the risk of accidental release of avalanches. [MEPRA et le risque de déclenchement accidentel d'avalanches]

Giraud, G., Navarre, J.P., Les apports de la recherche scientifique à la sécurité neige, glace et avalanche. Actes de colloque (Contribution of scientific research to safety with snow, ice and avalanche. Proceedings of the seminar, Chamonix, France, May 30-June 3, 1995). Edited by F. Sivardière, Grenoble, France, ANENA (Association Nationale pour l'Étude de la Neige et des Avalanches), 1995, p.145-150, In French with English summary. 10 refs.

Avalanche forecasting, Avalanche modeling, Avalanche triggering, Snow cover stability, Computerized simulation

50-4663

Verification of avalanche danger with respect to avalanche forecasting.

Föhn, P.M.B., Schweizer, J., Les apports de la recherche scientifique à la sécurité neige, glace et avalanche. Actes de colloque (Contribution of scientific research to safety with snow, ice and avalanche. Proceedings of the seminar, Chamonix, France, May 30-June 3, 1995). Edited by F. Sivardière, Grenoble, France, ANENA (Association Nationale pour l'Étude de la Neige et des Avalanches), 1995, p.151-156, With French summary. 12 refs.

Avalanche forecasting, Avalanche modeling, Snow cover stability, Computerized simulation

50-4664

Avalanche hazard forecasting at the department level: the example of Isère. [La prévision départementale du risque d'avalanche: l'exemple de l'Isère]

Villecrose, J., Les apports de la recherche scientifique à la sécurité neige, glace et avalanche. Actes de colloque (Contribution of scientific research to safety with snow, ice and avalanche. Proceedings of the seminar, Chamonix, France, May 30-June 3, 1995). Edited by F. Sivardière, Grenoble, France, ANENA (Association Nationale pour l'Étude de la Neige et des Avalanches), 1995, p.157-161, In French with English summary.

Avalanche forecasting, Avalanche modeling, Snow cover stability, Computerized simulation, France

50-4665

Meteorological and snow conditions, avalanches and safety in Bulgarian mountains.

Mikhnevski, N., Les apports de la recherche scientifique à la sécurité neige, glace et avalanche. Actes de colloque (Contribution of scientific research to safety with snow, ice and avalanche. Proceedings of the seminar, Chamonix, France, May 30-June 3, 1995). Edited by F. Sivardière, Grenoble, France, ANENA (Association Nationale pour l'Étude de la Neige et des Avalanches), 1995, p.163-167, With French summary. 5 refs.

Avalanche forecasting, Avalanches, Accidents, Snow cover stability, Weather stations, Bulgaria

50-4666

Preliminary factors for a numerical avalanche hazard forecast day-to-day. [Premiers éléments pour une prévision numérique du risque d'avalanche au cours de la journée du lendemain]

Durand, Y., Merindol, L., Michoud, S., Les apports de la recherche scientifique à la sécurité neige, glace et avalanche. Actes de colloque (Contribution of scientific research to safety with snow, ice and avalanche. Proceedings of the seminar, Chamonix, France, May 30-June 3, 1995). Edited by F. Sivardière, Grenoble, France, ANENA (Association Nationale pour l'Étude de la Neige et des Avalanches), 1995, p.169-175, In French with English summary. 7 refs.

Avalanche forecasting, Avalanche modeling, Meteorological factors, Computerized simulation

50-4667

Limits of wind-tunnel modeling of snow accumulations.

Naaim-Bouvet, F., Les apports de la recherche scientifique à la sécurité neige, glace et avalanche. Actes de colloque (Contribution of scientific research to safety with snow, ice and avalanche. Proceedings of the seminar, Chamonix, France, May 30-June 3, 1995). Edited by F. Sivardière, Grenoble, France, ANENA (Association Nationale pour l'Étude de la Neige et des Avalanches), 1995, p.177-182, With French summary. 9 refs.

Snowdrifts, Blowing snow, Snowstorms, Snow erosion, Snow loads, Snow fences, Wind tunnels, Computerized simulation

50-4668

Avalanches: foreseeable or unforeseeable. [Avalanches: prévisibles ou imprévisibles]

Lambert, R., Les apports de la recherche scientifique à la sécurité neige, glace et avalanche. Actes de colloque (Contribution of scientific research to safety with snow, ice and avalanche. Proceedings of the seminar, Chamonix, France, May 30-June 3, 1995). Edited by F. Sivardière, Grenoble, France, ANENA (Association Nationale pour l'Étude de la Neige et des Avalanches), 1995, p.183-186, In French with English summary. 5 refs.

Avalanche forecasting, Avalanche tracks, Safety

50-4669

Summer and autumn avalanches: a neglected hazard. [Avalanches d'été, avalanches d'automne, un risque méconnu]

Zuanon, J.P., Les apports de la recherche scientifique à la sécurité neige, glace et avalanche. Actes de colloque (Contribution of scientific research to safety with snow, ice and avalanche. Proceedings of the seminar, Chamonix, France, May 30-June 3, 1995). Edited by F. Sivardière, Grenoble, France, ANENA (Association Nationale pour l'Étude de la Neige et des Avalanches), 1995, p.187-192, In French with English summary.

Avalanches, Avalanche formation, Accidents, Safety, France, Switzerland, Italy

50-4670

Results of a survey on gas avalanche triggers (GAZEX). [Bilan d'une enquête sur les déclencheurs à gaz (GAZEX)]

Rapin, F., Carsana, O., Les apports de la recherche scientifique à la sécurité neige, glace et avalanche. Actes de colloque (Contribution of scientific research to safety with snow, ice and avalanche. Proceedings of the seminar, Chamonix, France, May 30-June 3, 1995). Edited by F. Sivardière, Grenoble, France, ANENA (Association Nationale pour l'Étude de la Neige et des Avalanches), 1995, p.193-199, In French with English summary. 3 refs.

Avalanche triggering, Blasting, Explosives

50-4671

Integrated system for artificial avalanche control.

Gubler, H., Les apports de la recherche scientifique à la sécurité neige, glace et avalanche. Actes de colloque (Contribution of scientific research to safety with snow, ice and avalanche. Proceedings of the seminar, Chamonix, France, May 30-June 3, 1995). Edited by F. Sivardière, Grenoble, France, ANENA (Association Nationale pour l'Étude de la Neige et des Avalanches), 1995, p.201-206, With French summary. 4 refs.

Avalanche forecasting, Avalanche triggering, Blasting, Snow cover stability, Safety

50-4672

Modeling of snow reflectance in the visible and near infrared. Comparison with laboratory measurements. Application to remote sensing. [Modélisation de la réflectance de la neige du visible au proche infrarouge. Comparaison avec des mesures en laboratoire. Application à télédétection]

Leroux, C., Lenoble, J., Sergent, C., Fily, M., Hovi-ener, J.W., Les apports de la recherche scientifique à la sécurité neige, glace et avalanche. Actes de colloque (Contribution of scientific research to safety with snow, ice and avalanche. Proceedings of the seminar, Chamonix, France, May 30-June 3, 1995). Edited by F. Sivardière, Grenoble, France, ANENA (Association Nationale pour l'Étude de la Neige et des Avalanches), 1995, p.207-212, In French with English summary. 9 refs.

Snow surveys, Snow optics, Snow cover structure, Snow cover stability, Snow cover effect, Snow air interface, Air pollution, Albedo, Radar echoes, Avalanche forecasting

50-4673

Snow gliding measurements in subalpine forests and on alpine pastures.

Höller, P., Les apports de la recherche scientifique à la sécurité neige, glace et avalanche. Actes de colloque (Contribution of scientific research to safety with snow, ice and avalanche. Proceedings of the seminar, Chamonix, France, May 30-June 3, 1995). Edited by F. Sivardière, Grenoble, France, ANENA (Association Nationale pour l'Étude de la Neige et des Avalanches), 1995, p.213-218, With French summary. 5 refs.

Snow slides, Snow cover stability, Avalanche formation, Forest land, Vegetation factors

50-4674

Measurements on avalanche dynamics: a new installation.

Rammer, L., Les apports de la recherche scientifique à la sécurité neige, glace et avalanche. Actes de colloque (Contribution of scientific research to safety with snow, ice and avalanche. Proceedings of the seminar, Chamonix, France, May 30-June 3, 1995). Edited by F. Sivardière, Grenoble, France, ANENA (Association Nationale pour l'Étude de la Neige et des Avalanches), 1995, p.219-225, With French summary. 11 refs.

Avalanche engineering, Avalanche mechanics, Snow loads, Impact tests, Austria

50-4675

New approaches to numerical mapping of avalanches. [Quelques orientations nouvelles de la cartographie numérique des avalanches]

Borrel, G., Les apports de la recherche scientifique à la sécurité neige, glace et avalanche. Actes de colloque (Contribution of scientific research to safety with snow, ice and avalanche. Proceedings of the seminar, Chamonix, France, May 30-June 3, 1995). Edited by F. Sivardière, Grenoble, France, ANENA (Association Nationale pour l'Étude de la Neige et des Avalanches), 1995, p.227-233, In French with English summary. 7 refs.

Avalanche forecasting, Avalanche formation, Snow cover stability, Mapping, Computerized simulation, Data processing

50-4676

Effect of a dam on the flow of an aerosol. [Effet d'une digue sur l'écoulement d'un aérosol]

Auge, A., Ousset, F., Marco, O., Les apports de la recherche scientifique à la sécurité neige, glace et avalanche. Actes de colloque (Contribution of scientific research to safety with snow, ice and avalanche. Proceedings of the seminar, Chamonix, France, May 30-June 3, 1995). Edited by F. Sivardière, Grenoble, France, ANENA (Association Nationale pour l'Étude de la Neige et des Avalanches), 1995, p.235-240, In French with English summary. 5 refs.

Avalanche modeling, Avalanche mechanics, Avalanche engineering, Snow retention, Turbulent flow

50-4677

Snow pressure measurements on snow net systems.

Margreth, S., Les apports de la recherche scientifique à la sécurité neige, glace et avalanche. Actes de colloque (Contribution of scientific research to safety with snow, ice and avalanche. Proceedings of the seminar, Chamonix, France, May 30-June 3, 1995). Edited by F. Sivardière, Grenoble, France, ANENA (Association Nationale pour l'Étude de la Neige et des Avalanches), 1995, p.241-248, With French summary. 3 refs.

Avalanche engineering, Avalanche mechanics, Snow loads, Snow retention, Snow fences

50-4678

Avalanche dynamics: introduction to the Lautaret Pass alpine experimental site. [Dynamique des avalanches. Présentation du site expérimental du Col du Lautaret (Hautes-Alpes)]

Ousset, F., Marco, O., Taillandier, J.M., Les apports de la recherche scientifique à la sécurité neige, glace et avalanche. Actes de colloque (Contribution of scientific research to safety with snow, ice and avalanche. Proceedings of the seminar, Chamonix, France, May 30-June 3, 1995). Edited by F. Sivardière, Grenoble, France, ANENA (Association Nationale pour l'Étude de la Neige et des Avalanches), 1995, p.249-254, In French with English summary. 20 refs.

Avalanche mechanics, Avalanche modeling, Stations, France

50-4679

Anchoring by exploded piles: technical improvements. [Ancrages par pieux explosés: améliorations techniques]

Bouvet, P., Mazzoleni, G., Rapin, F., Les apports de la recherche scientifique à la sécurité neige, glace et avalanche. Actes de colloque (Contribution of scientific research to safety with snow, ice and avalanche. Proceedings of the seminar, Chamonix, France, May 30-June 3, 1995). Edited by F. Sivardière, Grenoble, France, ANENA (Association Nationale pour l'Étude de la Neige et des Avalanches), 1995, p.255-260, In French with English summary. 3 refs.

Avalanche engineering, Avalanche mechanics, Snow loads, Snow retention, Snow fences, Anchors

50-4680

Acoustic detection of avalanches at the Sionne-Anzère site, Valais, Switzerland. [Détection acoustique des avalanches. Site La Sionne-Anzère, Valais, Suisse]

Chritin, V., Rossi, M., Les apports de la recherche scientifique à la sécurité neige, glace et avalanche. Actes de colloque (Contribution of scientific research to safety with snow, ice and avalanche. Proceedings of the seminar, Chamonix, France, May 30-June 3, 1995). Edited by F. Sivardière, Grenoble, France, ANENA (Association Nationale pour l'Étude de la Neige et des Avalanches), 1995, p.261-266, In French with English summary. 3 refs.

Avalanche forecasting, Avalanche formation, Avalanche triggering, Snow cover stability, Snow acoustics, Snowquakes, Acoustic measurement, Warning systems, Switzerland

50-4681

Avalanche frequency at Roger's Pass, British Columbia, Canada.

Smith, M.J., McClung, D.M., Les apports de la recherche scientifique à la sécurité neige, glace et avalanche. Actes de colloque (Contribution of scientific research to safety with snow, ice and avalanche. Proceedings of the seminar, Chamonix, France, May 30-June 3, 1995). Edited by F. Sivardière, Grenoble, France, ANENA (Association Nationale pour l'Étude de la Neige et des Avalanches), 1995, p.267-272, With French summary. 7 refs.

Avalanches, Avalanche forecasting, Avalanche tracks, Avalanche erosion, Avalanche deposits, Statistical analysis, Canada—British Columbia

50-4682

Study on the avalanche hazard in the central Spanish Pyrenees (Aragon region). [Étude du risque d'avalanches dans la partie centrale des Pyrénées espagnoles (région aragonaise)]

Sáez Alagón, M.T., Rios Aragüés, S., Les apports de la recherche scientifique à la sécurité neige, glace et avalanche. Actes de colloque (Contribution of scientific research to safety with snow, ice and avalanche. Proceedings of the seminar, Chamonix, France, May 30-June 3, 1995). Edited by F. Sivardière, Grenoble, France, ANENA (Association Nationale pour l'Étude de la Neige et des Avalanches), 1995, p.273-276, In French with English summary. 4 refs.

Avalanche forecasting, Snow cover stability, Mapping, Data processing, Safety, Regional planning, Spain—Pyrenees

50-4683

Determining the mechanical resistance of snow by the Pandalp penetrometer. [Détermination de la résistance mécanique de la neige à l'aide du Pandalp]

Daudon, D., Flavigny, E., Borel, S., Gourves, R., Page, Y., Les apports de la recherche scientifique à la sécurité neige, glace et avalanche. Actes de colloque (Contribution of scientific research to safety with snow, ice and avalanche. Proceedings of the seminar, Chamonix, France, May 30-June 3, 1995). Edited by F. Sivardière, Grenoble, France, ANENA (Association Nationale pour l'Étude de la Neige et des Avalanches), 1995, p.277-282, In French with English summary. 7 refs.

Avalanche forecasting, Snow cover stability, Snow strength, Snow hardness, Penetration tests, Penetrometers

50-4684

Methods for studying snow slabs from new data. [Méthodologie pour l'étude des plaques de neige à partir de données nouvelles]

Duclos, A., Bolognesi, R., Les apports de la recherche scientifique à la sécurité neige, glace et avalanche. Actes de colloque (Contribution of scientific research to safety with snow, ice and avalanche. Proceedings of the seminar, Chamonix, France, May 30-June 3, 1995). Edited by F. Sivardière, Grenoble, France, ANENA (Association Nationale pour l'Étude de la Neige et des Avalanches), 1995, p.283-289, In French with English summary. 11 refs.

Snow cover stability, Avalanche forecasting, Avalanche modeling, Avalanche formation, Avalanche triggering

50-4685

Experimental study on optical parameters of snow: directional hemispheric reflectance in the 400/1000 nm and 800/1600 nm range. [Étude expérimentale des paramètres optiques de la neige. Réflectance directionnelle hémisphérique (domaines spectraux 400/1000 nm et 800/1600 nm)]

Sergent, C., Pougatch, E., Sudul, M., Bourdelles, B., Leroux, C., Cachier, H., Les apports de la recherche scientifique à la sécurité neige, glace et avalanche. Actes de colloque (Contribution of scientific research to safety with snow, ice and avalanche. Proceedings of the seminar, Chamonix, France, May 30-June 3, 1995). Edited by F. Sivardière, Grenoble, France, ANENA (Association Nationale pour l'Étude de la Neige et des Avalanches), 1995, p.291-297, In French with English summary. 5 refs.

Avalanche forecasting, Snow optics, Snow cover stability, Snow air interface, Snow impurities, Air pollution

50-4686

Experimental investigations on the effectiveness of avalanche balloons.

Tschirky, F., Meister, R., Ammann, W.J., Buser, O., Caviezel, W., Hiller, M., Les apports de la recherche scientifique à la sécurité neige, glace et avalanche. Actes de colloque (Contribution of scientific research to safety with snow, ice and avalanche. Proceedings of the seminar, Chamonix, France, May 30-June 3, 1995). Edited by F. Sivardière, Grenoble, France, ANENA (Association Nationale pour l'Étude de la Neige et des Avalanches), 1995, p.299-307, With French summary. 2 refs.

Avalanches, Rescue equipment, Safety, Inflatable structures, Portable equipment, Cold weather survival, Markers

50-4687

Skier triggered slab avalanche release—some practical implications.

Schweizer, J., Camponovo, C., Fierz, C., Föhn, P.M.B., Les apports de la recherche scientifique à la sécurité neige, glace et avalanche. Actes de colloque (Contribution of scientific research to safety with snow, ice and avalanche. Proceedings of the seminar, Chamonix, France, May 30-June 3, 1995). Edited by F. Sivardière, Grenoble, France, ANENA (Association Nationale pour l'Étude de la Neige et des Avalanches), 1995, p.309-315, With French summary. 10 refs.

Avalanche forecasting, Avalanche triggering, Snow cover stability, Snow strength, Snow hardness, Hardness tests, Skis, Safety

50-4688

Effects of temperature on fracture of dry alpine snow.

McClung, D.M., Les apports de la recherche scientifique à la sécurité neige, glace et avalanche. Actes de colloque (Contribution of scientific research to safety with snow, ice and avalanche. Proceedings of the seminar, Chamonix, France, May 30-June 3, 1995). Edited by F. Sivardière, Grenoble, France, ANENA (Association Nationale pour l'Étude de la Neige et des Avalanches), 1995, p.317-322, With French summary. 7 refs.

Snow cover stability, Snow temperature, Snow strength, Snow deformation, Avalanche forecasting, Avalanche formation, Avalanche triggering

50-4689

Probabilistic evaluation of snow cover stability on mountain slopes.

Chernous, P.A., Les apports de la recherche scientifique à la sécurité neige, glace et avalanche. Actes de colloque (Contribution of scientific research to safety with snow, ice and avalanche. Proceedings of the seminar, Chamonix, France, May 30-June 3, 1995). Edited by F. Sivardière, Grenoble, France, ANENA (Association Nationale pour l'Étude de la Neige et des Avalanches), 1995, p.323-328, With French summary. 6 refs.

Avalanche forecasting, Avalanche formation, Avalanche modeling, Snow cover stability, Snow strength, Statistical analysis

50-4690

Snow in the Chilean Andes and its natural hazards. [La neige dans les Andes chiliennes et ses risques naturels]

Ugarte G., G., Les apports de la recherche scientifique à la sécurité neige, glace et avalanche. Actes de colloque (Contribution of scientific research to safety with snow, ice and avalanche. Proceedings of the seminar. Chamonix, France, May 30-June 3, 1995). Edited by F. Sivardière, Grenoble, France, ANENA (Association Nationale pour l'Étude de la Neige et des Avalanches), 1995, p.329-333, In French with English summary. 2 refs.

Avalanches, Snow cover stability, Snow cover distribution, Accidents, Safety, Chile—Andes Mountains

50-4691

Prediction of slushflow hazard—objectives and procedures of an ongoing research project in Rana, north Norway.

Hestnes, E., Bakkehøi, S., Les apports de la recherche scientifique à la sécurité neige, glace et avalanche. Actes de colloque (Contribution of scientific research to safety with snow, ice and avalanche. Proceedings of the seminar, Chamonix, France, May 30-June 3, 1995). Edited by F. Sivardière, Grenoble, France, ANENA (Association Nationale pour l'Étude de la Neige et des Avalanches), 1995, p.335-340, With French summary. 5 refs. For another version see 50-404.

Avalanche forecasting, Avalanche formation, Snow cover stability, Snow cover structure, Snow hydrology, Snowmelt, Slush, Flood forecasting, Norway

50-4692

Radiometer for the detection of avalanche victims.

Sval, M., Les apports de la recherche scientifique à la sécurité neige, glace et avalanche. Actes de colloque (Contribution of scientific research to safety with snow, ice and avalanche. Proceedings of the seminar, Chamonix, France, May 30-June 3, 1995). Edited by F. Sivardière, Grenoble, France, ANENA (Association Nationale pour l'Étude de la Neige et des Avalanches), 1995, p.341-346, With French summary. 5 refs.

Avalanches, Rescue equipment, Radiometry, Snow cover effect, Snow electrical properties, Subsurface investigations

50-4693

Impact of climate change on snow conditions in the French Alps. [Évaluation de l'impact d'un changement du climat sur l'enneigement des Alpes françaises]

Martin, E., Brun, E., Durand, Y., Les apports de la recherche scientifique à la sécurité neige, glace et avalanche. Actes de colloque (Contribution of scientific research to safety with snow, ice and avalanche. Proceedings of the seminar, Chamonix, France, May 30-June 3, 1995). Edited by F. Sivardière, Grenoble, France, ANENA (Association Nationale pour l'Étude de la Neige et des Avalanches), 1995, p.347-352, In French with English summary. 4 refs.

Avalanche forecasting, Avalanche modeling, Snow cover stability, Snow cover distribution, Snow depth, Snow air interface, Global warming, Computerized simulation, Regional planning, France

50-4694

AMANDA: Antarctic Muon And Neutrino Detector Array.

Barwick, S.W., et al, Trends in astroparticle-physics, edited by P.C. Bosetti. Proceedings of the 2nd International Conference on Trends in Astroparticle-Physics, Aachen, Germany, Oct. 10-12, 1991, Stuttgart, B.G. Teubner Verlagsgesellschaft, 1994, p.211-216, 7 refs.

DLC QB463.T75 1994

Atmospheric physics, Neutron probes, Ice cores, Ice optics, Transparence, Measuring instruments, Ice physics, Antarctica—Amundsen-Scott Station

Enormous detectors with unprecedented sensitivity will be required to search for astrophysical sources of neutrinos. If the transparency of deep polar ice is similar to that measured in the laboratory, then AMANDA (Antarctic Muon and Neutrino Detector Array) may be the most cost-effective way to reach the detector volumes required to search for astrophysical sources of high energy neutrinos or WIMP annihilation within the sun. The authors describe a series of tests to be conducted near Amundsen-Scott Station during the '91-'92 antarctic campaign. The primary goal of these tests is to extend the optical transparency measurements of polar ice to a depth of one km by measuring the rate of downward-moving muons with a prototype string of 4 optical modules. Additional objectives include the measurement of up/down discrimination, background light levels, and timing resolution. The design of the prototype string and its expected performance based on laboratory calibrations are discussed. (Auth.)

50-4695

Crystal structure of dichlorofluoromethane.

Pridmore, R.W., Torrie, B.H., Binbrek, O.S., Powell, B.M., *Molecular physics,* Apr. 10, 1996, 87(5), p.999-1005, 10 refs.

Hydrocarbons, Cryogenics, Molecular structure, Frozen liquids, Structural analysis, Spectroscopy, Neutron scattering, Profiles, Temperature effects, Low temperature tests, Hydrogen bonds

50-4696

Structure of solid fluoroform.

Torrie, B.H., Binbrek, O.S., Powell, B.M., *Molecular physics,* Apr. 10, 1996, 87(5), p.1007-1013, 20 refs.

Hydrocarbons, Cryogenics, Low temperature tests, Molecular structure, Hydrogen bonds, Spectroscopy, Neutron scattering, Frozen liquids, Profiles, Thermodynamic properties

50-4697

Freeze-thaw weathering: the cold region "panacea".

Hall, K., *Polar geography and geology,* Apr.-June 1995, 19(2), p.79-87, 21 refs.

Geocryology, Frozen rocks, Frozen rock temperature, Frost weathering, Frost shattering, Freeze thaw cycles, Rock properties, Classifications, Periglacial processes

50-4698

Description and classifications of soils and landscapes of the Lower Kolyma River, northeastern Russia.

Smith, C.A.S., et al, *Polar geography and geology,* Apr.-June 1995, 19(2), p.107-126, 19 refs.

Geocryology, Soil surveys, Soil classification, Arctic landscapes, Subarctic landscapes, Active layer, Tundra terrain, Littoral zone, Landscape types, Russia—Kolyma River

50-4699

Natural vegetation complexes of the Northern Dvina River floodplain.

Vekhov, N.V., *Polar geography and geology,* Apr.-June 1995, 19(2), p.127-137, 16 refs.

Taiga, Floodplains, Subarctic landscapes, Ecosystems, Plant ecology, Vegetation patterns, Geomorphology, Soil classification, Russia—Northern Dvina River

50-4700

Extreme fire seasons in the forests of Evenkia.

Ivanova, G.A., *Polar geography and geology,* Apr.-June 1995, 19(2), p.138-144, 14 refs.

Forest ecosystems, Subarctic landscapes, Permafrost transformation, Forest fires, Damage, Taiga, Seasonal variations, Desiccation, Environmental impact, Russia—Siberia

50-4701

Vegetation response to global and regional environmental change on the Taymyr Peninsula during the Holocene.

Koshkarova, V.L., *Polar geography and geology,* Apr.-June 1995, 19(2), p.145-151, 15 refs.

Subarctic landscapes, Tundra terrain, Forest ecosystems, Taiga, Paleoecology, Paleobotany, Paleoclimatology, Global change, Vegetation patterns, Soil analysis, Russia—Siberia

50-4702

Ice-crystal fogs of central Sakha.

Osipov, D.A., *Polar geography and geology,* Apr.-June 1995, 19(2), p.152-156, 3 refs.

Fog formation, Ice fog, Ice crystal growth, Aerosols, Air pollution, Environmental impact, Meteorological factors, Statistical analysis, Periodic variations, Forecasting, Russia—Sakha

50-4703

Inflight icing part II: making hard choices.

Steenblik, J.W., *Air line pilot,* Sep. 1995, 64(8), p.10-13.

Aircraft icing, Accidents, Safety, Standards, Countermeasures, Tests

50-4704

Inflight icing part III: operations.

Steenblik, J.W., *Air line pilot,* Oct. 1995, 64(9), p.10-14.

Aircraft icing, Safety, Standards, Sensors, Ice detection, Ice prevention, Ice accretion, Tests

50-4705

Ice is where you find it.

Steenblik, J.W., *Air line pilot,* Nov.-Dec. 1995, 64(10), p.10-13.

Aircraft icing, Ice forecasting, Ice detection, Cloud physics, Supercooled clouds, Standards, Weather observations, Safety

50-4706

Numerical model simulation of a summer reversal of the Beaufort gyre.

Preller, R.H., Posey, P.G., *Geophysical research letters*, Jan. 1989, 16(1), p.69-72, 9 refs.

Oceanography, Ocean currents, Air ice water interaction, Atmospheric pressure, Sea ice distribution, Drift, Ice cover thickness, Ice forecasting, Ice models, Mathematical models, Simulation, Seasonal variations, Beaufort Sea

50-4707

Frontal signals east of Iceland from the GEOSAT altimeter.

Robinson, A.R., et al, *Geophysical research letters*, Jan. 1989, 16(1), p.77-80, 16 refs.

Oceanography, Water level, Surface structure, Height finding, Ocean currents, Hydrography, Remote sensing, Radar echoes, Iceland

50-4708

Impact of heterogeneous reactions on stratospheric chemistry of the Arctic.

Douglass, A.R., Stolarski, R.S., *Geophysical research letters*, Feb. 1989, 16(2), p.131-134, 17 refs.

Polar atmospheres, Climatology, Cloud physics, Stratosphere, Polar stratospheric clouds, Aerosols, Heterogeneous nucleation, Condensation, Cloud dissipation, Photochemical reactions, Ozone, Models

50-4709

Infrared absorption coefficients of gaseous chlorine nitrate at 296 K.

Tuazon, E.C., Wallington, T.J., *Geophysical research letters*, Apr. 1989, 16(4), p.331-334, 19 refs.

Polar atmospheres, Stratosphere, Atmospheric composition, Aerosols, Radiation absorption, Infrared radiation, Simulation, Spectra

50-4710

Glacial isostasy and the interplay between upper and lower mantle lateral viscosity heterogeneities.

Sabadini, R., Gasperini, P., *Geophysical research letters*, May 1989, 16(5), p.429-432, 13 refs.

Tectonics, Pleistocene, Earth crust, Marine geology, Sea level, Glacial geology, Isostasy, Ice loads, Viscosity, Periodic variations, Mathematical models

50-4711

Quaternary record of eastern Svalbard—an overview.

Landvik, J.Y., Hjort, C., Mangerud, J., Möller, P., Salvigsen, O., *Polar research*, Nov. 1995, 14(2), p.95-103, 45 refs.

Glaciation, Glacial geology, Glacial deposits, Glacial erosion, Marine geology, Marine deposits, Quaternary deposits, Bottom sediment, Sediment transport, Geochronology, Paleoclimatology, Norway—Svalbard

50-4712

On the glaciology of Edgeøya and Barentsøya, Svalbard.

Dowdeswell, J.A., Bamber, J.L., *Polar research*, Nov. 1995, 14(2), p.105-122, 28 refs.

Glacier surveys, Glacier oscillation, Glacier surfaces, Glacier thickness, Glacier surges, Glacier tongues, Glacial hydrology, Subglacial drainage, Glacier mass balance, Radio echo soundings, Spaceborne photography, Norway—Svalbard

50-4713

Late Quaternary glacial and environmental history of Kongsøya, Svalbard.

Ingólfsson, Ó., et al, *Polar research*, Nov. 1995, 14(2), p.123-139, 51 refs.

Glaciation, Glacial geology, Glacial deposits, Glacial erosion, Glacial till, Isostasy, Marine geology, Marine deposits, Quaternary deposits, Geochronology, Stratigraphy, Fossils, Paleoclimatology, Norway—Svalbard

50-4714

Dynamics of the last glaciation in eastern Svalbard as inferred from glacier-movement indicators.

Salvigsen, O., Adrielsson, L., Hjort, C., Kelly, M., Landvik, J.Y., Ronnert, L., *Polar research*, Nov. 1995, 14(2), p.141-152, 39 refs.

Glaciation, Glacial geology, Glacial erosion, Glacier flow, Striations, Glacial till, Geochronology, Paleoclimatology, Norway—Svalbard

50-4715

Postglacial sea-level history of Edgeøya and Barentsøya, eastern Svalbard.

Bondevik, S., Mangerud, J., Ronnert, L., Salvigsen, O., *Polar research*, Nov. 1995, 14(2), p.153-180, 59 refs.

Glaciation, Glacial geology, Marine geology, Marine deposits, Sea level, Isostasy, Beaches, Paleobotany, Drift, Wood, Radioactive age determination, Geochronology, Norway—Svalbard

50-4716

Late Weichselian to early Holocene sedimentation in a steep fjord/valley setting, Visdalen, Edgeøya, eastern Svalbard: glacial deposits, alluvial/colluvial-fan deltas and spit-platforms.

Möller, P., Stubdrup, O.P., Kronborg, C., *Polar research*, Nov. 1995, 14(2), p.181-203, 37 refs.

Glaciation, Glacial geology, Glacial deposits, Glacial till, Marine geology, Marine deposits, Alluvium, Lacustrine deposits, Quaternary deposits, Stratigraphy, Geochronology, Norway—Svalbard

50-4717

Early Holocene land floras and faunas from Edgeøya, eastern Svalbard.

Bennike, O., Hedenäs, L., *Polar research*, Nov. 1995, 14(2), p.205-214, 54 refs.

Paleobotany, Paleoecology, Plant ecology, Introduced plants, Vegetation patterns, Fossils, Paleoclimatology, Norway—Svalbard

50-4718

Recent foraminiferal distribution in Freemansundet and early Holocene stratigraphy on Edgeøya, Svalbard.

Hansen, A., Knudsen, K.L., *Polar research*, Nov. 1995, 14(2), p.215-238, 46 refs.

Glaciation, Glacial geology, Glacial deposits, Marine geology, Marine deposits, Bottom sediment, Quaternary deposits, Fossils, Stratigraphy, Paleoecology, Paleoclimatology, Norway—Svalbard

50-4719

Radiocarbon dated common mussels *Mytilus edulis* from eastern Svalbard and the Holocene marine climatic optimum.

Hjort, C., Mangerud, J., Adrielsson, L., Bondevik, S., Landvik, J.Y., Salvigsen, O., *Polar research*, Nov. 1995, 14(2), p.239-243, 25 refs.

Marine geology, Marine deposits, Bottom sediment, Quaternary deposits, Marine biology, Paleoecology, Fossils, Radioactive age determination, Paleoclimatology, Norway—Svalbard

50-4720

Past glaciation and sea levels on Bjørnøya, Svalbard.

Salvigsen, O., Slettemark, Ø., *Polar research*, Nov. 1995, 14(2), p.245-251, 15 refs.

Glaciation, Glacial geology, Glacial deposits, Glacial erosion, Striations, Marine geology, Marine deposits, Quaternary deposits, Sea level, Geochronology, Paleoclimatology, Norway—Svalbard

50-4721

Early Holocene environment on Bjørnøya (Svalbard) inferred from multidisciplinary lake sediment studies.

Wohlfarth, B., et al, *Polar research*, Nov. 1995, 14(2), p.253-275, 54 refs.

Paleoecology, Paleobotany, Plant ecology, Lacustrine deposits, Bottom sediment, Quaternary deposits, Fossils, Lithology, Stratigraphy, Paleoclimatology, Norway—Svalbard

50-4722

Long-range tropospheric transport of pollution aerosols into the Alaskan Arctic.

Raatz, W.E., Shaw, G.E., *Journal of climate and applied meteorology*, July 1984, 23(7), p.1052-1064, 31 refs.

Air pollution, Climatology, Synoptic meteorology, Atmospheric composition, Aerosols, Turbulent boundary layer, Atmospheric circulation, Origin, Sampling, Seasonal variations, Statistical analysis, United States—Alaska—Barrow

50-4723

Observations of backscatter, particle concentration and frost point in North Polar vortex stratospheric clouds.

Rosen, J.M., Kjome, N.T., Oltmans, S.J., *Geophysical research letters*, Aug. 1990, 17(9), p.1271-1274, 7 refs.

Polar atmospheres, Polar stratospheric clouds, Cloud physics, Atmospheric composition, Sounding, Aerosols, Backscattering, Freezing points, Turbulent diffusion, Profiles, Refractivity

50-4724

Balloon observations of nitric acid aerosol formation in the arctic stratosphere. I. Gaseous nitric acid.

Schlager, H., Arnold, F., Hofmann, D.J., Deshler, T., *Geophysical research letters*, Aug. 1990, 17(9), p.1275-1278, 15 refs.

Polar atmospheres, Stratosphere, Cloud physics, Atmospheric composition, Sounding, Ozone, Aerosols, Chemical properties, Condensation, Supersaturation, Condensation nuclei

50-4725

Balloon observations of nitric acid aerosol formation in the arctic stratosphere. II. Aerosol.

Hofmann, D.J., Deshler, T., Arnold, F., Schlager, H., *Geophysical research letters*, Aug. 1990, 17(9), p.1279-1282, 12 refs.

Polar atmospheres, Atmospheric composition, Sounding, Polar stratospheric clouds, Cloud physics, Particle size distribution, Condensation, Profiles, Aerosols, Ozone, Turbulent diffusion

50-4726

Heterogeneous chemistry on liquid sulfate aerosols: a comparison of in situ measurement with zero-dimensional model calculations.

Mather, J.H., Brune, W.H., *Geophysical research letters*, Aug. 1990, 17(9), p.1283-1286, 18 refs.

Polar atmospheres, Polar stratospheric clouds, Cloud physics, Atmospheric composition, Ozone, Aerosols, Heterogeneous nucleation, Evaporation, Solubility, Chemical properties, Photochemical reactions, Models

50-4727

Kinetic measurements of the $ClO + O_3 \rightarrow ClOO + O_2$ reaction.

Stevens, P.S., Anderson, J.G., *Geophysical research letters*, Aug. 1990, 17(9), p.1287-1290, 20 refs.

Polar atmospheres, Stratosphere, Ozone, Heterogeneous nucleation, Cloud dissipation, Aerosols, Simulation, Photochemical reactions

Upper limits for the bimolecular rate constant for the reaction $ClO + O_3 \rightarrow ClOO + O_2$ have been measured directly between 233 and 413 K using a discharge-flow system at 1-2 torr total pressure. Production of ClO (which occurs quickly after thermal decomposition of ClOO in the presence of O_3) was detected using laser magnetic resonance spectroscopy, and distinguished from the reactant ClO through isotopic oxygen labelling. The experimental conditions were modelled using a kinetic simulation program to show that chemical and isotopic scrambling interferences were negligible. From the results, it is concluded that this bimolecular reaction does not contribute significantly to the observed ozone depletion within the antarctic vortex. (Auth. mod.)

50-4728

Formation of nitric acid hydrates—a chemical equilibrium approach.

Smith, R.H., *Geophysical research letters*, Aug. 1990, 17(9), p.1291-1294, 13 refs.

Polar atmospheres, Climatic changes, Atmospheric composition, Aerosols, Polar stratospheric clouds, Cloud physics, Hydrates, Vapor pressure, Condensation, Models

In an examination of polar stratospheric cloud formation, published data are used to calculate equilibrium constants for the reactions $HNO_3.3H_2O(s)$ <-> $HNO_3(g) + 3H_2O(g)$ and $HNO_3.H_2O(s)$ <-> $HNO_3(g) + H_2O(g)$ over the temperature range 190 to 205 K. Standard enthalpies of formation and standard entropies are calculated for the tri- and mono-hydrates. These are shown to be in reasonable agreement with earlier calorimetric measurements. The formation of nitric acid trihydrate in the polar stratosphere is discussed in terms of these equilibrium constants. (Auth. mod.)

50-4729

Periodic auroral events at the high-latitude convection reversal in the 16 MLT region.

Sandholt, P.E., Lockwood, M., *Geophysical research letters*, Oct. 1990, 17(11), p.1877-1880, 14 refs.

Polar atmospheres, Geomagnetism, Atmospheric electricity, Boundary layer, Photometry, Atmospheric physics, Ion diffusion, Convection

50-4730

Flow trajectories in the Bering Sea: evidence for chaos.

Reed, R.K., Stabeno, P.J., *Geophysical research letters*, Nov. 1990, 17(12), p.2141-2144, 7 refs.

Oceanography. Hydrography, Ocean currents, Flow measurement, Drift stations, Periodic variations, Remote sensing, Bering Sea

50-4731

Balloonborne measurements of polar stratospheric clouds and ozone at -93° in the Arctic in February 1990.

Hofmann, D.J., Deshler, T., *Geophysical research letters*, Nov. 1990, 17(12), p.2185-2188, 12 refs.

Polar atmospheres, Polar stratospheric clouds, Cloud physics, Ozone, Profiles, Sounding, Atmospheric density, Decomposition, Aerosols, Particle size distribution, Temperature effects, Sweden—Kiruna

50-4732

Equilibrium constant for the reaction of ClO + O_2 <-> $ClO.O_2$.

Demore, W.B., *Geophysical research letters*, Dec. 1990, 17(12), p.2353-2355, 6 refs.

Polar atmospheres, Stratosphere, Atmospheric composition, Decomposition, Aerosols, Chemical properties, Stability, Photochemical reactions, Temperature effects, Models

In an attempt to model polar stratospheric cloud decomposition, photolysis of $Cl_2/Cl_2O/O_2$ mixtures at 197 K has been used to place an upper limit of 4×10^{-18}/cm^3 on the equilibrium constant for the ClO + O_2 <-> $ClO.O_2$ reaction at that temperature. This value is three orders of magnitude below the current NASA recommendation. (Auth. mod.)

50-4733

Pressure dependence of the reaction between ClO and OClO at 226K.

Parr, A.D., Wayne, R.P., Hayman, G.D., Jenkin, M.E., Cox, R.A., *Geophysical research letters*, Dec. 1990, 17(12), p.2357-2360, 21 refs.

Polar atmospheres, Stratosphere, Atmospheric composition, Cloud dissipation, Decomposition, Aerosols, Vapor pressure, Ozone, Photochemical reactions, Heterogeneous nucleation, Simulation

The reaction between ClO and OClO has been studied using the molecular modulation technique at 226K over the pressure range 4.8-29.0 torr. The reaction has a strong pressure dependence and the thermolecular rate constant obtained at this temperature is $k_1 = (2.8 \pm 2.2) \times 10^{-31}$ cm^6/molecule^2/s. The importance of the reaction is discussed in the context of the large ozone depletions observed in the antarctic springtime. An explanation for the unexpected behavior observed in earlier studies of the $OClO/NO_2$ system is also given. (Auth. mod.)

50-4734

Heterogeneous reactions of N_2O_5 and HBr and their influence on ozone depletion in the polar stratosphere. [Heterogene Reaktionen von N_2O_5 und HBr und ihr Einfluß auf den Ozonabbau in der polaren Stratosphäre]

Seisel, S., *Berichte zur Polarforschung*, 1996, No.193, 102p., In German with English summary. Refs. p.96-101.

Atmospheric composition, Chemical composition, Ozone, Stratosphere, Polar regions, Antarctica—Georg von Neumayer Station, Antarctica—Georg Forster Station

Heterogeneous reactions of dinitrogenpentoxide (N_2O_5) and nitric acid ($HONO_2$) with hydrogen bromide (HBr) were studied to learn about the products and mechanisms of these reactions. The homogeneous gas phase reaction of $HONO_2$ with HBr was also investigated. The investigations of the heterogeneous reactions were performed at temperatures below 200 K, analyzing simultaneously the solid phase by means of FTIR-spectroscopy and the gas phase by mass spectrometry. The characterization of the individual compounds was in good agreement with literature data. Observed differences were due to the different temperatures used in this investigation. The uptake of HBr on ice and nitric acid trihydrate (NAT) resulted in a dissociation of HBr on both surfaces. The heterogeneous reaction of N_2O_5 with HBr was studied on N_2O_5, ice and NAT surfaces. The reaction started at temperatures above 165 K. The observed reaction products were nitric acid monohydrate (NAM) in the solid phase, molecular bromine (Br_2) and nitric oxide (NO) in the gas phase. A further product showing a doublet in the FTIR spectrum at 1865/cm and 1894/cm was positively identified as nitrosyl bromide (BrNO). Variation of the reactant concentrations led to some observations which allowed conclusions about the mechanism of this reaction. At low HBr concentration nitrous acid (HONO) was detected in the gas phase. Furthermore N_2O_5 was always in its ionic form $NO_2^+NO_3^-$. (Auth. mod.)

50-4735

Measuring the conductivity and density of ice cores. [Leitfähigkeits- und Dichtemessung an Eisbohrkernen]

Wilhelms, F., *Berichte zur Polarforschung*, 1996, No.191, 224p., In German with English summary. Refs. p.215-222.

Ice cores, Dielectric properties, Ice density, Electrical resistivity, Greenland

50-4736

Durability of microfiber-reinforced mortars.

Pigeon, M., Pleau, R., Azzabi, M., Banthia, N., *Cement and concrete research*, Apr. 1996, 26(4), p.601-609, 9 refs.

Mortars, Reinforced concretes, Composite materials, Concrete durability, Concrete strength, Cement admixtures, Freeze thaw tests, Frost resistance, Temperature effects

50-4737

Glacial rebound of the British Isles—III: constraints on mantle viscosity.

Lambeck, K., Johnston, P., Smither, C., Nakada, M., *Geophysical journal international*, May 1996, 125(2), p.340-354, 29 refs.

Glacial geology, Pleistocene, Ice sheets, Isostasy, Geologic processes, Rheology, Earth crust, Viscosity, Sea level, Glacier thickness, Ice models, Mathematical models, United Kingdom

50-4738

Pollen and charcoal analyses from Lake Etu-Mustajärvi, southern Finland, with special reference to an Early Holocene *Urtica* pollen maximum.

Sarmaja-Korjonen, K., *Geological Society of Finland. Bulletin*, 1995, 67(1), p.37-46, 36 refs.

Paleoecology, Paleobotany, Lacustrine deposits, Palynology, Vegetation patterns, Sampling, Stratigraphy, Forest fires, Geochronology, Finland—Etu-Mustajärvi

50-4739

Quantitative cold differential thermal analysis.

Dunn, J.R., Hudec, P.P., Rensselaer Polytechnic Institute. Department of Geology. Contribution 65-7, Physical Research Project No.4. Acceptability tests for coarse aggregates—influence of clays on water and ice rock pores. Phase 4(pt.1), Troy, New York State Department of Public Works, Feb. 1965, 15p.

Thermal analysis, Concrete aggregates, Cement admixtures, Freezing rate, Thermal conductivity, Ice water interface, Temperature measurement, Supercooling, Temperature effects, Measuring instruments, Laboratory techniques

50-4740

Impact fracturing of frozen ground and rocks.

Fedulov, A.I., Labutin, V.N., *Journal of mining science*, Jan. 1996, 31(5), p.366-369, Translated from Fiziko-tekhnicheskie problemy razrabotki poleznykh iskopaemykh.

Mining, Coal, Permafrost, Excavation, Frozen rock strength, Frozen ground mechanics, Impact tests, Cracking (fracturing)

50-4741

Diatom, chrysophyte and protozoan distributions along a latitudinal transect in Fennoscandia.

Pienitz, R., Douglas, M.S.V., Smol, J.P., Huttunen, P., Meriläinen, J., *Ecography*, Dec. 1995, 18(4), p.429-439, 53 refs.

Plant ecology, Plankton, Vegetation patterns, Tundra vegetation, Limnology, Suspended sediments, Subarctic landscapes, Distribution, Forest lines, Sampling, Classifications, Correlation, Norway, Finland

50-4742

Real-time operational forecasting on shipboard of the Iceland-Faeroe frontal variability.

Robinson, A.R., Arango, H.G., Miller, A.J., Warn-Varnas, A., Poulain, P.M., Leslie, W.G., *American Meteorological Society. Bulletin*, Feb. 1996, 77(2), p.243-259, 40 refs.

Oceanography, Ocean currents, Hydrography, Wave propagation, Forecasting, Boundary layer, Fluid dynamics, Water temperature, Computerized simulation, Thermal diffusion, Greenland Sea

50-4743

Magnetic climatology: mineral magnetism and the ice ages. [Magnetoklimatologie: mineralmagnetismus und Eiszeiten]

Heller, F., Evans, M.E., *Naturwissenschaften*, Mar. 1996, 83(3), p.97-102, In German with English summary. 19 refs.

Pleistocene, Paleoclimatology, Quaternary deposits, Geomagnetism, Loess, Eolian soils, Sampling, Geochronology, Remanent magnetism

50-4744

Late-glacial palynology of the Myrtaceae of southern Chile.

Zhou, M.M., Heusser, C.J., *Review of palaeobotany and palynology*, Mar. 1996, 91(1-4), p.283-315, 46 refs.

Paleoclimatology, Subarctic landscapes, Paleobotany, Paleoecology, Palynology, Glacial deposits, Fossils, Sampling, Scanning electron microscopy, Radioactive age determination, Geochronology, Classifications, Chile

50-4745

Pollen morphology of Himalayan *Pinus* and *Quercus* and its importance in palynological studies in Himalayan area.

Nakagawa, T., Yasuda, Y., Tabata, H., *Review of palaeobotany and palynology*, Mar. 1996, 91(1-4), p.317-329, 16 refs.

Paleobotany, Paleoclimatology, Trees (plants), Lacustrine deposits, Palynology, Fossils, Sampling, Scanning electron microscopy, Classifications, Structural analysis, Nepal—Kathmandu Valley

50-4746

Pedoanthracological contribution to the study of the evolution of the upper treeline in the Maurienne Valley (North French Alps): methodology and preliminary data.

Carcaillet, C., Thinon, M., *Review of palaeobotany and palynology*, Mar. 1996, 91(1-4), p.399-416, With French summary. 54 refs.

Paleoecology, Forest lines, Vegetation patterns, Alpine landscapes, Forest fires, Sediments, Sampling, Soil composition, Stratification, Sampling, Profiles, Correlation, France—Alps

50-4747

Differential bioaccumulation of non-*ortho*-substituted and other PCB congeners in coastal arctic invertebrates and fish.

Bright, D.A., Grundy, S.L., Reimer, K.J., *Environmental science & technology*, Oct. 1995, 29(10), p.2504-2512, 37 refs.

Oceanography, Ecosystems, Water pollution, Sedimentation, Suspended sediments, Hydrocarbons, Biomass, Marine biology, Environmental impact, Environmental tests, Sampling, Chemical analysis, Correlation, Canada—Northwest Territories—Cambridge Bay

50-4748

Analysis of the annual variation of tropospheric and stratospheric ozone derived from ozonesonde data.

Gruzdev, A.N., Sitnov, S.A., *Izvestiya. Atmospheric and oceanic physics,* Feb. 1995, 30(4), p.461-470, Translated from Fizika atmosfery i okeana. 27 refs.

Polar atmospheres, Climatology, Sounding, Atmospheric composition, Stratosphere, Aerosols, Ozone, Turbulent diffusion, Seasonal variations, Antarctica—Showa Station, Canada—Northwest Territories—Resolute, Antarctica—Amundsen-Scott Station

A comprehensive analysis of annual variations in the latitude-height field of ozone mixing ratios is performed on the basis of ozone soundings at 28 stations in the world ozone-measuring network. Using different characteristics of annual variation and applying various methods of analysis, peculiarities and common features of intraannual evolution are revealed in the middle and lower stratosphere, free troposphere, and atmospheric boundary layer in the Arctic, Antarctic, middle and subtropical latitudes of the Northern Hemisphere, and mid-latitudes of the Southern Hemisphere. Essential differences in ozone intraannual evolution between the Arctic and the Antarctic are noted and possible mechanisms are discussed. An estimate of the cross-tropopause ozone flux responsible for the large increase in the tropospheric ozone content in the Northern Hemisphere extratropical latitudes in Mar.-Apr. is obtained. (Auth.)

50-4749

Three-dimensional mesoscale model of cloudiness evolution with detailed account of microphysical and radiative processes, orography, and its application for cirrus clouds modelling.

Khvorostianov, V.I., *Izvestiya. Atmospheric and oceanic physics,* Feb. 1995, 30(4), p.513-526, Translated from Fizika atmosfery i okeana. 22 refs.

Clouds (meteorology), Cloud cover, Cloud physics, Turbulent diffusion, Supersaturation, Ice crystal size, Ice crystal optics, Ice nuclei, Albedo, Radiation balance, Mathematical models

50-4750

Model computations on the effect of rising temperature on soil moisture and water availability in forest ecosystems dominated by Scots pine in the boreal zone of Finland.

Kellomäki, S., Väisänen, H., *Climatic change,* Apr. 1996, 32(4), p.423-445, 16 refs.

Forest ecosystems, Forest canopy, Subarctic landscapes, Climatic changes, Global warming, Water balance, Seepage, Soil temperature, Soil freezing, Snow cover effect, Evapotranspiration, Temperature effects, Environmental impact, Mathematical models, Finland

50-4751

Climate change and snow-cover duration in the Australian Alps.

Whetton, P.H., Haylock, M.R., Galloway, R., *Climatic change,* Apr. 1996, 32(4), p.447-479, 42 refs.

Climatology, Climatic changes, Global warming, Snow cover stability, Snowmelt, Snow depth, Alpine landscapes, Seasonal variations, Long range forecasting, Mathematical models, Simulation, Australia—Alps

50-4752

Comparison of load restriction timings determined using FHwA guidelines and frost tubes.

Yesiller, N., Benson, C.H., Bosscher, P.J., *Journal of cold regions engineering,* Mar. 1996, 10(1), p.6-24, 9 refs.

Pavement bases, Bearing strength, Dynamic loads, Soil freezing, Phase transformations, Freezing indexes, Seasonal freeze thaw, Thaw weakening, Thaw depth, Air temperature, Sensors, Thermal analysis, Forecasting, Standards

50-4753

Probability distributions used in 100-year return period of air-freezing index.

Steurer, P.M., *Journal of cold regions engineering,* Mar. 1996, 10(1), p.25-35, 13 refs.

Climatology, Air temperature, Freezing indexes, Periodic variations, Soil freezing, Long range forecasting, Frost forecasting, Statistical analysis, Construction, Foundations, Design criteria, Standards

50-4754

Probability distributions for peak stage on rivers affected by ice jams.

Tuthill, A.M., Wuebben, J.L., Daly, S.F., White, K.D., MP 3821, *Journal of cold regions engineering,* Mar. 1996, 10(1), p.36-57, 18 refs.

River flow, Flow rate, River ice, Ice breakup, Flood forecasting, Ice jams, Water level, Seasonal variations, Classifications, Statistical analysis, Ice cover effect

This paper presents a new method for estimating winter peak stage along a river reach by dividing the record of winter peak discharges into distinct ice-jam and no-ice-jam populations. Rating curves may then be developed for each population using gradually-varied flow analysis and existing equilibirum ice-jam theory. Stage-probability distributions for the ice jam and no-ice-jam populations may then be combined into a single stage-frequency relationship representing the entire winter period. A case study is presented, in which the method is used to develop probability distributions for the annual maximum stage along the Winooski River at Montpelier, VT. Viewed in the context of the historical record, the method yields reasonable results. (Auth. mod.)

50-4755

Biological phosphorus removal: effect of low temperature.

Kumar, P., Mehrotra, I., Viraraghavan, T., *Journal of cold regions engineering,* June 1996, 10(2), p.63-76, 55 refs.

Water treatment, Sludges, Waste treatment, Decomposition, Bacteria, Microbiology, Geochemistry, Cold weather tests, Cold weather operation, Water temperature, Temperature effects, Environmental protection

50-4756

Pore-water pressures in freezing and thawing fine-grained soils.

Eigenbrod, K.D., Knutsson, S., Sheng, D.C., *Journal of cold regions engineering,* June 1996, 10(2), p.77-92, 21 refs.

Frozen ground mechanics, Soil strength, Clay soils, Soil tests, Soil freezing, Freeze thaw tests, Frost penetration, Water pressure, Porosity, Unfrozen water content, Soil water migration, Ice water interface, Temperature effects

50-4757

Concrete/reinforcing steel bond strength of low-temperature concrete.

Schroeder, H.P., Wood, T.B., *Journal of cold regions engineering,* June 1996, 10(2), p.93-117, 6 refs.

Concrete durability, Winter concreting, Concrete curing, Concrete hardening, Mechanical properties, Antifreezes, Concrete admixtures, Reinforced concretes, Steels, Structural analysis, Mechanical tests, Temperature effects

50-4758

Corn snow—today's skiing, tomorrow's meltwater.

Colbeck, S.C., MP 3822, *Avalanche review,* Apr. 1996, 14(6), p.1,3.

Snow hydrology, Snow strength, Snow cover structure, Snow crystal structure, Ice water interface, Freeze thaw cycles, Coalescence, Insolation, Classifications, Wet snow

50-4759

Mount Shasta.

Bachman, D., *Avalanche review,* Apr. 1996, 14(6), p.6.

Avalanche tracks, Damage, Trees (plants), Environmental impact, United States—California—Shasta, Mt.

50-4760

Bridal Veil.

Griffith, R., *Avalanche review,* Apr. 1996, 14(6), p.6.

Avalanche tracks, Power lines, Damage, Snow slides, United States—Utah—Bridal Veil

50-4761

Intermountain west January massacre.

Tremper, B., *Avalanche review,* Apr. 1996, 14(6), p.7.

Avalanches, Snow slides, Damage, Accidents, Seasonal variations, Safety

50-4762

Avalanche accidents this season. *Avalanche review,* Apr. 1996, 14(6), p.8.

Avalanches, Accidents, Safety, Statistical analysis

50-4763

Airborne imaging microwave radiometer—part I: radiometric analysis.

Collins, M.J., Warren, F.G.R., Paul, J.L., *IEEE transactions on geoscience and remote sensing,* May 1996, 34(3), p.643-655, 13 refs.

Oceanography, Ice surveys, Sea ice distribution, Aerial surveys, Sensor mapping, Microwaves, Radiometry, Brightness, Radiance, Polarization (waves), Accuracy

50-4764

Differentiating methane source areas in arctic environments with multitemporal ERS-1 SAR data.

Morrissey, L.A., Durden, S.L., Livingston, G.P., Stearn, J.A., Guild, L.S., *IEEE transactions on geoscience and remote sensing,* May 1996, 34(3), p.667-673, 30 refs.

Spaceborne photography, Arctic landscapes, Tundra terrain, Wetlands, Distribution, Seasonal freeze thaw, Synthetic aperture radar, Radar echoes, Backscattering, Terrain identification, Classifications, Natural gas, Vapor transfer, Air temperature, United States—Alaska—Barrow

50-4765

Seasonal dynamics of C-band backscatter of boreal forests with applications to biomass and soil moisture estimation.

Pulliainen, J.T., Mikkelä, P.J., Hallikainen, M.T., Ikonen, J.P., *IEEE transactions on geoscience and remote sensing,* May 1996, 34(3), p.758-770, 26 refs.

Forest ecosystems, Forest canopy, Biomass, Soil water, Vegetation patterns, Seasonal variations, Spaceborne photography, Synthetic aperture radar, Backscattering, Attenuation, Snow cover effect, Wet snow, Seasonal freeze thaw

50-4766

Discrete wavelet transform and the scale analysis of the surface properties of sea ice.

Lindsay, R.W., Percival, D.B., Rothrock, D.A., *IEEE transactions on geoscience and remote sensing,* May 1996, 34(3), p.771-787, 11 refs.

Sea ice, Ice surveys, Surface properties, Albedo, Surface temperature, LANDSAT, Spaceborne photography, Radiometry, Resolution, Accuracy, Image processing, Data processing, Filters, Wave propagation, Classifications, Analysis (mathematics)

50-4767

Time-dependent wave-packet studies on the sticking of HCl to an ice surface.

Wang, L.C., Clary, D.C., *Journal of chemical physics,* Apr. 8, 1996, 104(14), p.5663-5673, 64 refs.

Ice physics, Defects, Cloud physics, Polar stratospheric clouds, Ice vapor interface, Aerosols, Adsorption, Molecular energy levels, Molecular structure, Simulation

A molecular dynamics simulation of polar stratospheric chemical processes with a mixed time-dependent quantum-classical treatment is carried out for the adsorption of HCl on the (0001) surface of ice. All six coordinates of the HCl molecule are considered with two important coordinates, the vibrational coordinate r of HCl and the distance Z between the center of mass of HCl and the ice surface, treated quantally by a grid method with absorbing boundaries. The other coordinates of HCl and all coordinates of the water molecules of ice are treated classically except the intramolecular vibrational motions which are frozen. The results show that treating the two coordinates r and Z quantally is necessary in order to describe the adsorption accurately. The interaction spectra as well as other detailed dynamical information from the simulation are presented. An adsorption energy of 25 kJ/mol is obtained and compared with previous calculation and experiments. The energy transfer between HCl and the ice surface is also calculated. An effort is made to probe the effects of defects of the ice surface on the HCl scattering process. (Auth. mod.)

50-4768

Polar news/Notizie polari, Vol.11, No.3.

Centro Ricerca e Documentazione Polare, Rome, 1996, p.15-21, In Italian and English.

Paleoclimatology, Climatic changes, Ice cores, Antarctica—Vostok Station

The only article pertinent to Antarctica in this issue deals with sudden climatic warmings as recorded in ice cores from Vostok Station and Greenland. It is pointed out that researchers observe that only the warming events lasting more than 2000 years in Greenland, and corresponding to a warming of 2°C, are recorded in Antarctica as well.

50-4769

Factors affecting the behaviour of tropospheric and stratospheric ozone in the European Arctic and in Antarctica.

Taalas, P., *Finnish Meteorological Institute. Contributions,* 1993, No.10, 31p., 9 refs.

Ozone, Atmospheric circulation, Air temperature, Stratosphere, Clouds (meteorology), Atmospheric composition, Antarctica—Antarctic Peninsula

Three papers dealing with new ozone observations made in the European Arctic and at the Antarctic Peninsula since 1987 are reviewed. An update including the year 1992 is also made. Total ozone and ozone sounding observations made in the European Arctic and in Antarctica in 1987-92 and meteorological sounding observations made at Sodankylä, Finland in 1965-92 have been studied. No regular ozone soundings had been performed in the European Arctic and on the Antarctic Peninsula prior to 1988. Ozone observations have been interpreted using global analysis fields from the European Centre for Medium Range Weather Forecasts. These allow one to calculate potential vorticity maps and three-dimensional trajectories. The use of such tools in ozone research is a recent development. Pronounced stratospheric ozone loss has been observed in Antarctica in springtime, and this loss has become accentuated since 1987. No similar loss has been observed in the European Arctic, although large negative anomalies of short duration have been detected. Interhemispheric comparison of the behavior of tropospheric ozone at high latitudes has revealed that the spring peak of tropospheric ozone in the Northern Hemisphere is most probably caused by general photochemical activation of nitric and hydrocarbon compounds. (Auth. mod.)

50-4770

Temperature conditions in Iceland and the eastern North-Atlantic region, based on observations 1901-1990.

Einarsson, M.A., *Jökull,* 1993, No.43, p.1-13, With Icelandic summary. 7 refs.

Air temperature, Surface temperature, Marine meteorology, Meteorological data, Weather stations, Statistical analysis, Iceland

50-4771

Origin of the driftwood on the coasts of Iceland; a dendrochronological study.

Eggertsson, Ó., *Jökull,* 1993, No.43, p.15-32, With Icelandic summary. 49 refs.

Drift, Ice rafting, Ocean currents, Plant ecology, Paleobotany, Trees (plants), Wood, Iceland

50-4772

Lateglacial raised beaches and glacier recession in the Pistilfjördur-Bakkaflói area, northeast Iceland.

Norddahl, H., Hjort, C., *Jökull,* 1993, No.43, p.33-44, With Icelandic summary. 21 refs.

Glaciation, Glacial geology, Glacial erosion, Glacial deposits, Quaternary deposits, Marine geology, Marine deposits, Sea level, Beaches, Geochronology, Iceland

50-4773

Glacier variations 1930-1960, 1960-1990, and 1991-1992. [Jöklabreytingar 1930-1960, 1960-1990 og 1991-1992]

Sigurdsson, O., *Jökull,* 1993, No.43, p.73-79, In Icelandic with English summary.

Glacier surveys, Glacier oscillation, Iceland

50-4774

Contributions to research on Tibet. [Beiträge zur Tibetforschung]

Pörtge, K.H., ed, Li, J., ed, *Göttinger geographische Abhandlungen,* 1994, No.95, 282p., In German and English. Refs. passim. For individual papers see 50-4775 through 50-4781.

DLC G1.G6 Heft 95

Geological surveys, Alpine glaciation, Glacial geology, Glacial erosion, Glacial deposits, Quaternary deposits, Moraines, Lacustrine deposits, Snow line, Vegetation patterns, Geochronology, Paleoclimatology, China—Qinghai-Xizang Plateau

50-4775

Quaternary and recent geomorphological altitude zones in the eastern and central Qinghai-Xizang Plateau—an inventory. [Vorzeitliche und rezente geomorphologische Höhenstufung in Ost- und Zentraltibet—Eine Bestandsaufnahme]

Hövermann, J., Lehmkuhl, F., *Göttinger geographische Abhandlungen,* 1994, No.95, Beiträge zur Tibetforschung (Contributions to research on Tibet). Edited by K.H. Pörtge and J. Li, p.15-69, In German with English and Chinese summaries. 51 refs.

DLC G1.G6 Heft 95

Geological surveys, Topographic surveys, Alpine glaciation, Glacial geology, Glacial erosion, Glacial deposits, Periglacial processes, Permafrost distribution, Nivation, Snow line, Geomorphology, Paleoclimatology, China—Qinghai-Xizang Plateau

50-4776

Quaternary glaciations in the eastern and central Qinghai-Xizang Plateau. [Die vorzeitlichen Vergletscherungen in Ost- und Zentraltibet]

Hövermann, J., Lehmkuhl, F., *Göttinger geographische Abhandlungen,* 1994, No.95, Beiträge zur Tibetforschung (Contributions to research on Tibet). Edited by K.H. Pörtge and J. Li, p.71-114, In German with English and Chinese summaries. 41 refs.

DLC G1.G6 Heft 95

Geological surveys, Alpine glaciation, Glacial geology, Glacial erosion, Glacial deposits, Glacier surveys, Moraines, Snow line, Geochronology, Pleistocene, Paleoclimatology, China—Qinghai-Xizang Plateau

50-4777

On the paleoclimatology of the Tibetan Plateau during the last glaciation. [Zur Paläoklimatologie der letzten Eiszeit auf dem Tibetischen Plateau]

Frenzel, B., *Göttinger geographische Abhandlungen,* 1994, No.95, Beiträge zur Tibetforschung (Contributions to research on Tibet). Edited by K.H. Pörtge and J. Li, p.115-141, In German with English and Chinese summaries. 50 refs.

DLC G1.G6 Heft 95

Geological surveys, Alpine glaciation, Glacial geology, Loess, Soil dating, Lacustrine deposits, Snow line, Geochronology, Paleoclimatology, China—Qinghai-Xizang Plateau

50-4778

Holocene vegetation history of the eastern Qinghai-Xizang Plateau. [Über Probleme der holozänen Vegetatiosgeschichte Ostibets]

Frenzel, B., *Göttinger geographische Abhandlungen,* 1994, No.95, Beiträge zur Tibetforschung (Contributions to research on Tibet). Edited by K.H. Pörtge and J. Li, p.143-166, In German with English and Chinese summaries. 53 refs.

DLC G1.G6 Heft 95

Paleobotany, Paleoecology, Vegetation patterns, Revegetation, Palynology, Steppes, Forest lines, Paleoclimatology, China—Qinghai-Xizang Plateau

50-4779

Scanning electron microscopy investigations on the genesis of upper Pleistocene sediments of the Tibetan Plateau. [Rasterelektronen mikroskopische Untersuchungen zur Genese jungquartärer Sedimente auf dem tibetischen Plateau]

Frenzel, B., Liu, S.J., *Göttinger geographische Abhandlungen,* 1994, No.95, Beiträge zur Tibetforschung (Contributions to research on Tibet). Edited by K.H. Pörtge and J. Li, p.167-183, In German with English and Chinese summaries. 46 refs.

DLC G1.G6 Heft 95

Geological surveys, Quaternary deposits, Lacustrine deposits, Glacial till, Soil surveys, Cryogenic soils, Soil formation, Soil dating, Paleoclimatology, Scanning electron microscopy, China—Qinghai-Xizang Plateau

50-4780

Tree-ring chronologies at the upper tree line in eastern Tibet. [Dendrochronologische Untersuchungen an osttibetischen Waldgrenzstandorten]

Bräuning, A., *Göttinger geographische Abhandlungen,* 1994, No.95, Beiträge zur Tibetforschung (Contributions to research on Tibet). Edited by K.H. Pörtge and J. Li, p.185-192, In German with English and Chinese summaries. 7 refs.

DLC G1.G6 Heft 95

Paleobotany, Plant ecology, Vegetation patterns, Revegetation, Forest lines, Paleoclimatology, China—Qinghai-Xizang Plateau

50-4781

Shrinking of Quaternary lakes and environmental changes on the Tibetan Plateau.

Zhao, Y.T., *Göttinger geographische Abhandlungen,* 1994, No.95, Beiträge zur Tibetforschung (Contributions to research on Tibet). Edited by K.H. Pörtge and J. Li, p.193-200, With German and Chinese summaries. 8 refs.

DLC G1.G6 Heft 95

Geological surveys, Lacustrine deposits, Quaternary deposits, Salt lakes, Tectonics, Desiccation, Global change, Paleoclimatology, China—Qinghai-Xizang Plateau

50-4782

Basic characteristics of moraine types from the last glaciation in northeastern Qinghai-Xizang Plateau (Tibet).

Liu, S.J., Li, J., *Göttinger geographische Abhandlungen,* 1994, No.95, Beiträge zur Tibetforschung (Contributions to research on Tibet). Edited by K.H. Pörtge and J. Li, p.221-231, With German and Chinese summaries. 4 refs.

DLC G1.G6 Heft 95

Glaciation, Glacial geology, Glacial erosion, Glacial deposits, Moraines, Quaternary deposits, Pleistocene, Geochronology, Paleoclimatology, China—Qinghai-Xizang Plateau

50-4783

Basic features of glacial landforms in the Minshan.

Tang, B.X., Li, J., Liu, S.J., *Göttinger geographische Abhandlungen,* 1994, No.95, Beiträge zur Tibetforschung (Contributions to research on Tibet). Edited by K.H. Pörtge and J. Li, p.233-241, With German and Chinese summaries. 3 refs.

DLC G1.G6 Heft 95

Geological surveys, Glacier surveys, Alpine glaciation, Glacial geology, Glacial erosion, Glacial deposits, Glacier oscillation, Moraines, Quaternary deposits, Geochronology, Paleoclimatology, China—Qinghai-Xizang Plateau

50-4784

Distribution pattern and minimizing measures of landslides and rock avalanches along the mountain highways in Sichuan, Qinghai and Tibet.

Wang, C.H., *Göttinger geographische Abhandlungen,* 1994, No.95, Beiträge zur Tibetforschung (Contributions to research on Tibet). Edited by K.H. Pörtge and J. Li, p.243-252, With German and Chinese summaries. 3 refs.

DLC G1.G6 Heft 95

Highway planning, Landslides, Slope stability, Slope protection, Avalanche forecasting, China—Qinghai-Xizang Plateau

50-4785

Recent mountain disasters and prevention of debris flows in the eastern Qinghai-Xizang Plateau.

Tang, B.X., Liu, S.J., Liu, S.Q., *Göttinger geographische Abhandlungen,* 1994, No.95, Beiträge zur Tibetforschung (Contributions to research on Tibet). Edited by K.H. Pörtge and J. Li, p.253-261, With German and Chinese summaries. 10 refs.

DLC G1.G6 Heft 95

Mudflows, Accidents, Highway planning, Regional planning, Slope stability, Slope protection, Soil stabilization, Soil conservation, China—Qinghai-Xizang Plateau

50-4786

Main problems of the ecologic environment in the north-eastern part of the Qinghai-Xizang Plateau.

Zheng, Y.C., *Göttinger geographische Abhandlungen,* 1994, No.95, Beiträge zur Tibetforschung (Contributions to research on Tibet). Edited by K.H. Pörtge and J. Li, p.263-271, With German and Chinese summaries. 7 refs.

DLC G1.G6 Heft 95

Soil erosion, Soil conservation, Steppes, Desiccation, Environmental impact, Plant ecology, Vegetation patterns, Regional planning, China—Qinghai-Xizang Plateau

50-4787

Hydrological research on rivers and lakes in the Tibetan Plateau. [Hydrologische Untersuchungen an Flüssen und Seen im tibetischen Plateau]

Pörtge, K.H., *Göttinger geographische Abhandlungen,* 1994, No.95, Beiträge zur Tibetforschung (Contributions to research on Tibet). Edited by K.H. Pörtge and J. Li, p.273-282, In German with English and Chinese summaries. 19 refs.

DLC G1.G6 Heft 95

Limnology, Lake water, Rivers, Hydrogeochemistry, Water chemistry, China—Qinghai-Xizang Plateau

50-4788

Predicting the service life of concrete exposed to frost action through a modelling of the water absorption process in the air-pore system.

Fagerlund, G., NATO Advanced Research Workshop on the Modelling of Microstructure and its Potential for Studying Transport Properties and Durability, Saint-Rémy-lés-Chevreuse, France, July 10-13, 1994. Proceedings. Edited by H. Jennings et al and NATO Advanced Science Institutes, Series E. Applied Sciences. Vol.304, Dordrecht, Kluwer Academic Publishers, 1996, p.503-537, 9 refs.

DLC TA439.M564

Concrete durability, Concrete freezing, Frost action, Frost resistance, Porosity, Bubbles, Microstructure, Air entrainment, Water content, Saturation, Absorption, Capillarity, Analysis (mathematics)

50-4789

Cryospheric indices of global change.

Barry, R.G., Armstrong, R.L., Krenke, A.N., Kadomtseva, T., Boulder. University of Colorado. Final report, Jan. 1994, 25p., No.SES-91-12420, Refs. p.10-13.

Climatology, Global change, Snow cover distribution, Snow depth, Glacier oscillation, Glacier mass balance, Periodic variations, Geophysical surveys, Radiometry, Sensor mapping

50-4790

Asymmetric diurnal temperature change in the alpine region.

Weber, R.O., Talkner, P., Stefanicki, G., *Geophysical research letters,* Apr. 15, 1994, 21(8), p.673-676, 16 refs.

Climatology, Climatic changes, Global warming, Air temperature, Temperature variations, Alpine landscapes, Diurnal variations, Seasonal variations, Temperature measurement, Switzerland—Alps, Germany—Alps, Austria—Alps

50-4791

Alaskan glacier races forward. *Science news,* Nov. 20, 1993, 144(21), p.333.

Glacier oscillation, Glacier surges, Periodic variations, Velocity, United States—Alaska—Bering Glacier

50-4792

User services capability for the Defense Meteorological Satellite Program (DMSP) digital archive system.

Scharfen, G.R., Kroehl, H.W., Knowles, K.W., International Conference on Interactive Information and Processing Systems for Meteorology, Oceanography, and Hydrology, 10th, Nashville, TN, Jan. 23-28, 1994. Preprint volume, Boston, American Meteorological Society, 1994, p.154-159, 4 refs.

Geophysical surveys, Climatology, Meteorological data, Remote sensing, Spaceborne photography, Radiometry, Imaging, Data transmission

50-4793

Permafrost terms—the Swedish contribution to the International Permafrost Association (IPA) multilingual index of permafrost terms.

Åkerman, H.J., Van Everdingen, R.O., Sweden. Lund University. Department of Physical Geography. Rapporter och Notiser No.78, Lund, 1993, 31p., With thesaurus index in English and Swedish.

Permafrost, Classifications, Terminology, Dictionaries

50-4794

CASP annual report—1 February 1995-31 January 1996.

Cambridge Arctic Shelf Programme, Cambridge, Mar. 1996, 19p.

Research projects, Geological surveys, Marine geology, Exploration, Hydrocarbons, International cooperation

50-4795

Glaciers and glaciation in Glacier National Park, Montana.

Carrara, P.E., U.S. Geological Survey. Open-file report 93-510, U.S. Department of the Interior, 1993, 18p.

Glacial geology, Glacier surveys, Glacier oscillation, Geomorphology, United States—Montana—Glacier National Park

50-4796

Ice thickness, ablation, and other glaciological measurements on upper Fremont Glacier, Wyoming.

Naftz, D.L., Smith, M.E., *Physical geography,* 1993, 14(4), p.404-414, 20 refs.

Mountain glaciers, Glacier oscillation, Glacial meteorology, Glacier surveys, Glacier flow, Velocity measurement, Glacier thickness, Glacier ablation, Ice cores, Sampling, Air temperature, Seasonal variations, United States—Wyoming—Fremont Glacier

50-4797

Fatty acid adaptation in an antarctic bacterium—changes in primer utilization.

Nichols, D.S., Russell, N.J., *Microbiology,* Apr. 1996, 142(pt.4), p.747-754, 25 refs.

Marine biology, Sea ice, Ice composition, Chemical composition, Microbiology, Bacteria, Growth, Low temperature tests, Temperature effects, Physiological effects, Bacteria, Growth

The fatty acid composition and temperature/growth characteristics of a psychrophilic bacterium, strain ACAM 456 isolated from antarctic sea-ice, is reported. The bacterium produced acyl components that may be grouped in three different carbon chain types: even-chain, odd-chain and iso-branched odd-chain. The proportions of these chain types varied according to growth temperature, and were manipulated by growth on L-serine, L-leucine or propionic acid as sole carbon sources. *De novo* fatty acid synthesis was investigated using radioactive precursors. Compared with a controlled culture, resuspension of mid-exponential phase cells in artificial seawater led to a change in the selection and/or intracellular availability of acyl chain length components from cells declined, whereas the percentage of radiolabel present in odd-chain length components increased. (Auth. mod.)

50-4798

Carbon and nutrient availability effect on plant nutrient supply for upland forest sites in interior Alaska.

Yarie, J., Pulliam, W., Van Cleve, K., Schlentner, R., *New Zealand journal of forestry science,* 1994, 24(2-3), p.234-252, 31 refs.

Forest ecosystems, Forestry, Growth, Forest soils, Plant physiology, Taiga, Nutrient cycle, Soil microbiology, Geochemical cycles, Decomposition, Models, Sampling, United States—Alaska

50-4799

Oceanic methane hydrates: a "frontier" gas resource.

Max, M.D., Lowrie, A., *Journal of petroleum geology,* Jan. 1996, 19(1), p.41-56, 48 refs.

Marine geology, Hydrocarbons, Ocean bottom, Subsea permafrost, Hydrates, Natural gas, Clathrates, Stability, Geochemistry, Structural analysis, Seismic surveys, Natural resources

50-4800

Deep ice stirs debate on climate stability.

Monastersky, R., *Science news,* 1993, 144(24), p.390.

Paleoclimatology, Climatic changes, Ice sheets, Ice cores, Drill core analysis, Ice composition, Chemical analysis, Geochronology, Accuracy, Greenland

50-4801

International oceanic satellites in the Global Ocean Observing System in support of polar science.

Sherman, J.W., III, American Geophysical Union. 1993 Fall Meeting, Washington, D.C., 1993, 11p., 8 refs.

Oceanographic surveys, Climatology, Geophysical surveys, Marine meteorology, Ice surveys, Remote sensing, Spacecraft, Sensors, Design, Data processing

The international oceanic satellites offer a unique opportunity for numerous applications of remotely sensed data for polar science and operations. This paper will review the non-NOAA polar-orbiting sensors and satellites and their contributions to polar monitoring that are or soon will be operating in this decade. The merging of satellite observations, high-performance computers, and improved oceanic and marine meteorological models offers the first real opportunity to have a global ocean observing system. Improved surface programs offer the opportunity for high-quality data to be available for the computer models, and high-speed computers permit the models to be run in a useful time frame. These combined capabilities allow both operational and research oceanic and climatic needs to be met. Satisfying research needs takes on important new dimensions if the understanding of ocean climate and the long-term coupling of the ocean and atmosphere are to be goals of the Global Ocean Observing System support to the Global Climate Observing System. (Auth. mod.)

50-4802

Spatial energy budgets in alpine tundra.

Greenland, D., *Theoretical and applied climatology,* 1993, 46(4), p.229-239, 36 refs.

Microclimatology, Tundra terrain, Tundra vegetation, Alpine tundra, Surface energy, Heat flux, Soil air interface, Vegetation factors, Vegetation patterns, Classifications, Computerized simulation, Computer programs, United States—Colorado—Front Range

50-4803

Greenland ice sheet thickness changes measured by laser altimetry.

Thomas, R., Krabill, W., Manizade, S., Jezek, K.C., American Geophysical Union. 1993 Fall Meeting, Washington, D.C., 1993, 4p., 3 refs. For another version see 50-751.

Climatology, Remote sensing, Ice sheets, Glacier mass balance, Aerial surveys, Glacier surveys, Glacier thickness, Height finding, Lasers, Periodic variations, Greenland

50-4804

Radar measurements of melt zones on the Greenland ice sheet.

Jezek, K.C., Gogineni, P., Shanableh, M., *Geophysical research letters,* Jan. 1, 1994, 21(1), p.33-36, 11 refs.

Glacier mass balance, Ice sheets, Ice volume, Glacier surfaces, Firn, Metamorphism (snow), Snowmelt, Regelation, Radiometry, Radar echoes, Backscattering, Snow optics, Greenland

50-4805

Impacts of climate variability and change on Canadian wetlands.

Woo, M.K., *Canadian water resources journal,* 1992, 17(1), p.63-69, 11 refs.

Climatology, Climatic changes, Global warming, Wetlands, Soil air interface, Evapotranspiration, Water balance, Water supply, Snowmelt, Flooding, Simulation, Temperature effects, Canada

50-4806
Glaciofluvial and glaciolacustrine sedimentation.
Jopling, A.V., ed, McDonald, B.C., ed, *Society of Economic Paleontologists and Mineralogists. Special publication,* 1975, No.23, 320p., Refs. passim.
Based on a symposium on glacial sedimentology held in Buffalo, NY, Mar. 10, 1972. For individual papers see 50-4807 through 50-4820.
DLC QE471.2.G5
Glacial geology, Glacial deposits, Subglacial drainage, Glacial lakes, Outwash, Alluvium, Lacustrine deposits, Sediment transport, Geochronology, Stratigraphy

50-4807
Early studies on stratified drift.
Jopling, A.V., *Society of Economic Paleontologists and Mineralogists. Special publication,* 1975, No.23, Glaciofluvial and glaciolacustrine sedimentation. Edited by A.V. Jopling and B.C. McDonald, p.4-21, Refs. p.18-21.
DLC QE471.2.G5
Glaciation, Glacial geology, Glacial erosion, Glacial deposits, Outwash, Sediment transport, Stratigraphy, Geochronology, Ice age theory, History

50-4808
Proglacial fluvial and lacustrine environments.
Church, M., Gilbert, R., *Society of Economic Paleontologists and Mineralogists. Special publication,* 1975, No.23, Glaciofluvial and glaciolacustrine sedimentation. Edited by A.V. Jopling and B.C. McDonald, p.22-100, Refs. p.90-99.
DLC QE471.2.G5
Glacial rivers, Glacial lakes, Glacial hydrology, Subglacial drainage, Glacial deposits, Outwash, Suspended sediments, Alluvium, Sediment transport, River flow

50-4809
Sediment transport in glacial meltwater streams.
Østrem, G., *Society of Economic Paleontologists and Mineralogists. Special publication,* 1975, No.23, Glaciofluvial and glaciolacustrine sedimentation. Edited by A.V. Jopling and B.C. McDonald, p.101-122, 22 refs.
DLC QE471.2.G5
Glacial hydrology, Glacial rivers, Subglacial drainage, Meltwater, Outwash, Suspended sediments, Alluvium, Glacial deposits, Sediment transport, Norway

50-4810
Interpretation of faults in glaciofluvial sediments.
McDonald, B.C., Shilts, W.W., *Society of Economic Paleontologists and Mineralogists. Special publication,* 1975, No.23, Glaciofluvial and glaciolacustrine sedimentation. Edited by A.V. Jopling and B.C. McDonald, p.123-131, 6 refs.
DLC QE471.2.G5
Glacial geology, Glacial deposits, Subglacial drainage, Outwash, Alluvium, Tectonics, Geochronology, Geomorphology

50-4811
Nature of esker sedimentation.
Banerjee, I., McDonald, B.C., *Society of Economic Paleontologists and Mineralogists. Special publication,* 1975, No.23, Glaciofluvial and glaciolacustrine sedimentation. Edited by A.V. Jopling and B.C. McDonald, p.132-154, 47 refs.
DLC QE471.2.G5
Glacial geology, Glacial deposits, Glacial hydrology, Subglacial drainage, Glacial till, Moraines, Outwash, Alluvium, Sediment transport

50-4812
Sedimentology of the Brampton esker and its associated deposits: an empirical test of theory.
Saunderson, H.C., *Society of Economic Paleontologists and Mineralogists. Special publication,* 1975, No.23, Glaciofluvial and glaciolacustrine sedimentation. Edited by A.V. Jopling and B.C. McDonald, p.155-176, 32 refs.
DLC QE471.2.G5
Glacial geology, Glacial deposits, Subglacial drainage, Glacial lakes, Lacustrine deposits, Outwash, Moraines, Alluvium, Geochronology, Geomorphology, Canada—Ontario

50-4813
Late Quaternary subaqueous outwash deposits near Ottawa, Canada.
Rust, B.R., Romanelli, R., *Society of Economic Paleontologists and Mineralogists. Special publication,* 1975, No.23, Glaciofluvial and glaciolacustrine sedimentation. Edited by A.V. Jopling and B.C. McDonald, p.177-192, 24 refs.
DLC QE471.2.G5
Glacial geology, Glacial deposits, Subglacial drainage, Outwash, Glacial till, Quaternary deposits, Marine geology, Marine deposits, Geochronology, Canada—Ontario

50-4814
Processes, bar morphology, and sedimentary structures on braided outwash fans, northeastern Gulf of Alaska.
Boothroyd, J.C., Ashley, G.M., *Society of Economic Paleontologists and Mineralogists. Special publication,* 1975, No.23, Glaciofluvial and glaciolacustrine sedimentation. Edited by A.V. Jopling and B.C. McDonald, p.193-222, 42 refs.
DLC QE471.2.G5
Glacial geology, Glacial erosion, Glacial deposits, Outwash, Alluvium, Sediment transport, Marine geology, Shoreline modification, Coastal topographic features, United States—Alaska—Alaska, Gulf

50-4815
Sedimentology and paleohydrology of late Wisconsinan outwash, Rocky Mountain Trench, southeastern British Columbia.
Clague, J.J., *Society of Economic Paleontologists and Mineralogists. Special publication,* 1975, No.23, Glaciofluvial and glaciolacustrine sedimentation. Edited by A.V. Jopling and B.C. McDonald, p.223-237, 32 refs.
DLC QE471.2.G5
Glacial geology, Glacial erosion, Glacial deposits, Glacial hydrology, Subglacial drainage, Glacial rivers, Glacial till, Outwash, Alluvium, Lake bursts, Sediment transport, Geochronology, Canada—British Columbia

50-4816
Fabric and structure in glaciofluvial gravels.
Rust, B.R., *Society of Economic Paleontologists and Mineralogists. Special publication,* 1975, No.23, Glaciofluvial and glaciolacustrine sedimentation. Edited by A.V. Jopling and B.C. McDonald, p.238-248, 31 refs.
DLC QE471.2.G5
Glacial geology, Glacial erosion, Glacial deposits, Subglacial drainage, Glacial rivers, Outwash, Moraines, Gravel, Floodplains, Sediment transport

50-4817
Sedimentation and physical limnology in proglacial Malaspina Lake, southeastern Alaska.
Gustavson, T.C., *Society of Economic Paleontologists and Mineralogists. Special publication,* 1975, No.23, Glaciofluvial and glaciolacustrine sedimentation. Edited by A.V. Jopling and B.C. McDonald, p.249-263, 15 refs.
DLC QE471.2.G5
Glacial hydrology, Subglacial drainage, Glacial lakes, Glacial deposits, Outwash, Meltwater, Suspended sediments, Bottom sediment, Lacustrine deposits, Sediment transport, United States—Alaska—Malaspina Lake

50-4818
Depositional sequences in glaciolacustrine deltas.
Gustavson, T.C., Ashley, G.M., Boothroyd, J.C., *Society of Economic Paleontologists and Mineralogists. Special publication,* 1975, No.23, Glaciofluvial and glaciolacustrine sedimentation. Edited by A.V. Jopling and B.C. McDonald, p.264-280, 23 refs.
DLC QE471.2.G5
Subglacial drainage, Glacial lakes, Glacial geology, Glacial deposits, Outwash, Suspended sediments, Alluvium, Deltas, Lacustrine deposits, Sediment transport

50-4819
Sedimentary successions in Pleistocene ice-marginal lakes.
Shaw, J., *Society of Economic Paleontologists and Mineralogists. Special publication,* 1975, No.23, Glaciofluvial and glaciolacustrine sedimentation. Edited by A.V. Jopling and B.C. McDonald, p.281-303, 34 refs.
DLC QE471.2.G5
Glacial geology, Glacial deposits, Subglacial drainage, Glacial lakes, Outwash, Alluvium, Deltas, Lacustrine deposits, Quaternary deposits, Sediment transport, Stratigraphy

50-4820
Rhythmic sedimentation in Glacial Lake Hitchcock, Massachusetts-Connecticut.
Ashley, G.M., *Society of Economic Paleontologists and Mineralogists. Special publication,* 1975, No.23, Glaciofluvial and glaciolacustrine sedimentation. Edited by A.V. Jopling and B.C. McDonald, p.304-320, 35 refs.
DLC QE471.2.G5
Glacial geology, Glacial deposits, Glacial lakes, Outwash, Alluvium, Deltas, Lacustrine deposits, Quaternary deposits, Stratigraphy, Paleoclimatology, United States—Massachusetts, United States—Connecticut

50-4821
Global sea-ice—upper-ocean model: some preliminary results.
Fichefet, T., Morales Maqueda, M.A., Planton, S., Bellevaux, C., International Symposium on Sea Ice, Beijing, China, Oct. 18-22, 1993, 1993, 14p., 26 refs.
Climatology, Marine atmospheres, Air ice water interaction, Sea ice distribution, Thermodynamics, Drift, Ice cover effect, Ice heat flux, Advection, Seasonal variations, Climatic factors, Ice models
The authors propose a new coupled upper-ocean-sea-ice model suitable for climate studies. The model consists of a thermodynamic component and a dynamic component linked by advection processes. The thermodynamic part allows for sensible and latent heat storage in the ice. A parameterization of leads is also included. With regard to the dynamic part, the acceleration term in the momentum equation is neglected and the sea-ice interaction is modelled by a bulk rheology. The upper-ocean model is made of an integral mixed-layer model and a diffusive pycnocline model. At the surface, the coupled model is forced by a climatology derived from outputs of a 10-year run of the atmospheric general circulation model EMERAUDE of Météo France. The temperatures and salinities of the upper ocean are restored to the annual mean data of Levitus (1982). This allows to implicitly account for the advection of heat and salt by oceanic currents. Annual mean geostrophic currents, also obtained from Levitus (1982), are used as forcing in the sea-ice momentum balance. Results from a seasonal cycle simulation both in the Arctic and in the southern ocean are presented and compared to recent satellite and *in situ* observations. (Auth. mod.)

50-4822
Clay mineral signature of the NW Atlantic Boundary Undercurrent.
Fagel, N., Robert, C., Hillaire-Marcel, C., *Marine geology,* Feb. 1996, 130(1-2), p.19-28, 43 refs.
Marine geology, Oceanography, Ocean currents, Geochemistry, Suspended sediments, Bottom sediment, Sediment transport, Sampling, X ray analysis, Clay minerals, Labrador Sea

50-4823
Seismic stratigraphy of McMurdo Sound, Antarctica: implications for glacially influenced early Cenozoic eustatic change?
Bartek, L.R., Henrys, S.A., Anderson, J.B., Barrett, P.J., *Marine geology,* Feb. 1996, 130(1-2), p.79-98, 55 refs.
Marine geology, Glacial geology, Pleistocene, Ocean bottom, Drill core analysis, Stratigraphy, Glacier oscillation, Seismic reflection, Ice volume, Geochronology, Antarctica—McMurdo Sound
During Leg 2 of the *Polar Duke* 90 (PD90) cruise in the Ross Sea approximately 650 km of high-resolution seismic data were collected in McMurdo Sound with the main objective of facilitating regional correlation of stratigraphic events observed in the cores of the CIROS-1, DVDP-15, and MSSTS-1 drilling programs, and thereby providing an opportunity to test hypotheses on linkages between Cenozoic eustatic and antarctic ice volume fluctuations. Twenty unconformity-bound, seismic-stratigraphic sequences (labeled from top A to T) were identified in the McMurdo Sound PD90 database. However, seismic data from the shallow shelf on which CIROS-1 was drilled show erosional surfaces at many levels, indicating a condensed section in this area. Seismic units O, P and Q

correspond to the upper Oligocene interval where they recognized 3 glacioeustatic events. These three sequences, totaling around 300 m in thickness, can be traced over a distance of almost 100 km. However, they lack the seismic characteristics of glacial facies identified by Anderson and Bartek (1992) and thus the significance of waxing and waning events suggested for upper Oligocene strata in CIROS-1 remains equivocal. (Auth. mod.)

50-4824

Iodinated C_1-C_4 hydrocarbons released from ice algae in Antarctica.

Fogelqvist, E., Tanhua, T., International Conference on Natural-Produced Halogens, Delft, The Netherlands, 1995. Edited by A. Grimwall and E.W.B. de Leer, Dordrecht, The Netherlands, Kluwer Academic Publishers, 1995, p.295-305, 15 refs.

DLC QC877.6.N44 1995

Sea ice, Algae, Distribution, Biochemistry, Antarctica—Weddell Sea

As part of an extensive investigation of halocarbons (low molecular weight halogenated hydrocarbons) in the waters of the Weddell Sea in Jan.-Feb. 1993, a set of four brominated and eight iodinated hydrocarbons were measured in sea ice containing algal colonies, and the results were compared with those of surrounding surface seawater. Samples were collected in two ways. On one occasion, brownish ice was taken from underneath an ice floe, and the ice pore water analyzed. On another occasion, samples were collected from colonies living in the interface between the snow and the sea-ice. Some of the latter samples were also analyzed for their content of chlorophyll *a*. In none of the ice algae samples were brominated halocarbons found at concentrations significantly higher than in the surface water, in contrast to the published observations of other workers. Levels of bromocarbon concentrations in ice pore water (from the underside of an ice floe) were only 40-60% of the concentrations in surrounding water collected just under the floe. On the other hand, elevated concentrations of four iodinated compounds were observed in the ice pore water. (Auth. mod.)

50-4825

Biogenic emission of organobromine compounds to the Arctic Ocean and atmosphere.

Sturges, W.T., Cota, G.F., International Conference on Natural-Produced Halogens, Delft, The Netherlands, 1995. Edited by A. Grimwell and E.W.B. de Leer, Dordrecht, The Netherlands, Kluwer Academic Publishers, 1995, p.385-396, 16 refs.

DLC QC877.6.N44 1995

Atmospheric composition, Chemistry, Sea water, Chemical composition, Sea ice, Algae, United States—Alaska—Barrow, Canada—Northwest Territories—Resolute

50-4826

Satellites for monitoring climate change: the emerging scenario.

Kelkar, R.R., *Indian National Science Academy. Proceedings*, Jan. 1994, 60(A1), p.335-348, 21 refs.

DLC Q73.I774a

Spaceborne photography, Climatic changes, Meteorological instruments, Ozone, Microwaves, Remote sensing, Snow cover

Although in the last few years, large-scale utilization of satellite data has become possible for climate studies, there is also an increasing realization of the limitations of the processes by which information from meteorological satellites is being converted to a climate-scale database. This has led meteorologists and satellite planners to think very seriously about using modified or totally new wavelength channels, increasing the number of channels of radiometers, improving the resolutions, trying new orbits, etc. Some of these plans are very ambitious and if brought into reality, they are likely to completely alter the satellite scenario by the turn of the century. This paper first reviews the current status of various on-going programs and efforts and then describes the new possibilities that are opening up, based upon the plan projections of various countries available presently. Data on the antarctic ozone hole and snow cover are included. (Auth. mod.)

50-4827

Steepland geomorphology.

Slaymaker, O., ed, International Association of Geomorphologists, Publication, No.3, Chichester, England, John Wiley & Sons Ltd., 1995, 283p., Refs. passim. Presented at the 3rd International Geomorphological Conference held at McMaster University, Hamilton, Ontario, Aug. 1993. For selected papers see 50-4828 through 50-4837.

DLC GB406.S74 1995

Slope processes, Periglacial processes, Glacial geology, Glacial erosion, Glacial deposits, Moraines, Talus, Avalanche erosion, Avalanche deposits, Mass movements (geology), Geomorphology, Paleoclimatology

50-4828

Debris transfer and sedimentary environments: alpine glaciated areas.

Johnson, P.G., Steepland geomorphology. Edited by O. Slaymaker, Chichester, England, John Wiley & Sons Ltd., 1995, p.27-44, 22 refs.

DLC GB406.S74 1995

Alpine glaciation, Glacial geology, Glacial erosion, Glacial deposits, Glacier oscillation, Glacial till, Rock glaciers, Moraines, Outwash, Talus, Mass movements (geology), Sediment transport

50-4829

Slope erosion processes in the Alps.

Becht, M., Steepland geomorphology. Edited by O. Slaymaker, Chichester, England, John Wiley & Sons Ltd., 1995, p.45-61, 35 refs.

DLC GB406.S74 1995

Slope processes, Slope stability, Water erosion, Mudflows, Mass movements (geology), Talus, Alluvium, Avalanche erosion, Avalanche deposits, Sediment transport

50-4830

Volcano-glacier interactions: field survey, remote sensing and modelling—a case study (Nevado del Ruiz, Colombia).

Thouret, J.C., Vandemeulebrouck, J., Komorowski, J.C., Valla, F., Steepland geomorphology. Edited by O. Slaymaker, Chichester, England, John Wiley & Sons Ltd., 1995, p.63-88, 38 refs.

DLC GB406.S74 1995

Volcanoes, Mountain glaciers, Avalanche triggering, Avalanche erosion, Avalanche deposits, Lake bursts, Floods, Mudflows, Outwash, Accidents, Colombia

50-4831

Near-surface spring temperatures in an arctic coastal rock cliff: possible implications for rock breakdown.

Ødegård, R.S., Etzelmüller, B., Vatne, G., Sollid, J.L., Steepland geomorphology. Edited by O. Slaymaker, Chichester, England, John Wiley & Sons Ltd., 1995, p.89-102, 34 refs.

DLC GB406.S74 1995

Frozen rock temperature, Frost weathering, Frost shattering, Permafrost weathering, Permafrost heat balance, Snow cover effect, Snowmelt, Snow heat flux, Norway—Spitsbergen

50-4832

Postglacial microweathering of granite roches moutonnées in northern Scandinavia (Riksgränsen area, 68°N).

André, M.F., Steepland geomorphology. Edited by O. Slaymaker, Chichester, England, John Wiley & Sons Ltd., 1995, p.103-127, 43 refs.

DLC GB406.S74 1995

Glacial geology, Glacial erosion, Bedrock, Striations, Lichens, Soil microbiology, Weathering, Soil dating, Paleoclimatology, Sweden—Lapland, Norway—Lapland

50-4833

Dynamics of rock glaciers: data from Tröllaskagi, north Iceland.

Whalley, W.B., Hamilton, S.J., Palmer, C.F., Gordon, J.E., Martin, H.E., Steepland geomorphology. Edited by O. Slaymaker, Chichester, England, John Wiley & Sons Ltd., 1995, p.129-145, 39 refs.

DLC GB406.S74 1995

Rock glaciers, Glacier flow, Glacier oscillation, Glacial meteorology, Lichens, Soil dating, Ground ice, Paleoclimatology, Iceland

50-4834

Stratified slope deposits: the stone-banked sheets and lobes model.

Bertran, P., Francou, B., Texier, J.P., Steepland geomorphology. Edited by O. Slaymaker, Chichester, England, John Wiley & Sons Ltd., 1995, p.147-169, 63 refs.

DLC GB406.S74 1995

Slope processes, Periglacial processes, Altiplanation, Solifluction, Talus, Sediment transport, Stratigraphy, Paleoclimatology

50-4835

Catastrophic mass-movements and morphogenesis in the peri-Tibetan ranges: examples from west Kunlun east Pamir and Ladakh.

Fort, M., Peulvast, J.P., Steepland geomorphology. Edited by O. Slaymaker, Chichester, England, John Wiley & Sons Ltd., 1995, p.171-198, 68 refs.

DLC GB406.S74 1995

Alpine glaciation, Glacial geology, Glacial erosion, Glacial deposits, Glacial till, Outwash, Landslides, Mass movements (geology), Avalanche erosion, Avalanche deposits, Tectonics, Geomorphology, Himalaya Mountains, China—Qinghai-Xizang Plateau

50-4836

Estimating long-term rockfall accretion rates by lichenometry.

Luckman, B.H., Fiske, C.J., Steepland geomorphology. Edited by O. Slaymaker, Chichester, England, John Wiley & Sons Ltd., 1995, p.233-255, 42 refs.

DLC GB406.S74 1995

Slope processes, Talus, Glacial geology, Glacial deposits, Moraines, Lichens, Soil dating, Geochronology

50-4837

Bedded slope deposits with respect to the late Quaternary glacial sequence in the high Andes of Ecuador and Bolivia.

Heine, K., Steepland geomorphology. Edited by O. Slaymaker, Chichester, England, John Wiley & Sons Ltd., 1995, p.257-278, 46 refs.

DLC GB406.S74 1995

Alpine glaciation, Glacial geology, Glacial deposits, Rock glaciers, Moraines, Slope processes, Periglacial processes, Talus, Quaternary deposits, Geochronology, Stratigraphy, Paleoclimatology, Ecuador, Bolivia

50-4838

Landscape function and disturbance in arctic tundra.

Reynolds, J.F., ed, Tenhunen, J.D., ed, Ecological studies, Vol.120, Berlin, Springer-Verlag, 1996, 437p., Refs. passim. For individual papers see 50-4839 through 50-4857.

DLC QH105.A4L36 1996

Tundra vegetation, Tundra soils, Tundra climate, Plant ecology, Plant physiology, Vegetation patterns, Nutrient cycle, Ecosystems, Environmental impact

50-4839

Ecosystem response, resistance, resilience, and recovery in arctic landscapes: introduction.

Reynolds, J.F., Tenhunen, J.D., Landscape function and disturbance in arctic tundra. Ecological studies, Vol.120. Edited by J.F. Reynolds and J.D. Tenhunen, Berlin, Springer-Verlag, 1996, p.3-18, Refs. p.16-18.

DLC QH105.A4L36 1996

Tundra vegetation, Tundra soils, Plant ecology, Soil conservation, Ecosystems, Environmental impact, Human factors, Research projects

50-4840

Integrated ecosystem research in northern Alaska, 1947-1994.

Shaver, G.R., Landscape function and disturbance in arctic tundra. Ecological studies, Vol.120. Edited by J.F. Reynolds and J.D. Tenhunen, Berlin, Springer-Verlag, 1996, p.19-33, Refs. p.29-33.

DLC QH105.A4L36 1996

Tundra vegetation, Tundra soils, Tundra climate, Plant ecology, Nutrient cycle, Ecosystems, Environmental impact, Research projects, United States—Alaska—North Slope

50-4841

Disturbance and recovery of arctic Alaskan vegetation.

Walker, D.A., Landscape function and disturbance in arctic tundra. Ecological studies, Vol.120. Edited by J.F. Reynolds and J.D. Tenhunen, Berlin, Springer-Verlag, 1996, p.35-71, Refs. p.64-71.

DLC QH105.A4L36 1996

Tundra vegetation, Tundra soils, Plant ecology, Revegetation, Ecosystems, Human factors, Environmental impact, Soil pollution, Soil erosion, Land reclamation, United States—Alaska—North Slope

50-4842

Terrain and vegetation of the Imnavait Creek watershed.

Walker, D.A., Walker, M.D., Landscape function and disturbance in arctic tundra. Ecological studies, Vol.120. Edited by J.F. Reynolds and J.D. Tenhunen, Berlin, Springer-Verlag, 1996, p.73-108, Refs. p.106-108.

DLC QH105.A4L36 1996

Tundra vegetation, Tundra terrain, Tundra soils, Plant ecology, Vegetation patterns, Watersheds, United States—Alaska—North Slope

50-4843

Vegetation structure and aboveground carbon and nutrient pools in the Imnavait Creek watershed.

Hahn, S.C., Oberbauer, S.F., Gebauer, R., Grulke, N.E., Lange, O.L., Tenhunen, J.D., Landscape function and disturbance in arctic tundra. Ecological studies, Vol.120. Edited by J.F. Reynolds and J.D. Tenhunen, Berlin, Springer-Verlag, 1996, p.109-128, 27 refs.

DLC QH105.A4L36 1996

Tundra vegetation, Vegetation patterns, Plant ecology, Plant physiology, Biomass, Nutrient cycle, Watersheds, United States—Alaska—North Slope

50-4844

Energy balance and hydrological processes in an arctic watershed.

Hinzman, L.D., Kane, D.L., Benson, C.S., Everett, K.R., Landscape function and disturbance in arctic tundra. Ecological studies, Vol.120. Edited by J.F. Reynolds and J.D. Tenhunen, Berlin, Springer-Verlag, 1996, p.131-154, 39 refs.

DLC QH105.A4L36 1996

Tundra vegetation, Tundra soils, Tundra climate, Plant ecology, Water balance, Permafrost hydrology, Permafrost heat balance, Snow hydrology, Snowmelt, Snow cover effect, Computerized simulation, United States—Alaska—North Slope

50-4845

Shortwave reflectance properties of arctic tundra landscapes.

Hope, A.S., Stow, D.A., Landscape function and disturbance in arctic tundra. Ecological studies, Vol.120. Edited by J.F. Reynolds and J.D. Tenhunen, Berlin, Springer-Verlag, 1996, p.155-164, 29 refs.

DLC QH105.A4L36 1996

Tundra vegetation, Vegetation patterns, Vegetation factors, Tundra terrain, Terrain identification, Albedo, Radiometry

50-4846

Isotopic tracers for investigating hydrological processes.

Cooper, L.W., et al, Landscape function and disturbance in arctic tundra. Ecological studies, Vol.120. Edited by J.F. Reynolds and J.D. Tenhunen, Berlin, Springer-Verlag, 1996, p.165-182, Refs. p.180-182.

DLC QH105.A4L36 1996

Air pollution, Fallout, Scavenging, Snow impurities, Snowmelt, Tundra vegetation, Plant physiology, Physiological effects, United States—Alaska—North Slope

50-4847

Surface water chemistry and hydrology of a small arctic drainage basin.

Everett, K.R., Kane, D.L., Hinzman, L.D., Landscape function and disturbance in arctic tundra. Ecological studies, Vol.120. Edited by J.F. Reynolds and J.D. Tenhunen, Berlin, Springer-Verlag, 1996, p.185-201, 35 refs.

DLC QH105.A4L36 1996

Snow hydrology, Snowmelt, Snow composition, Snow cover effect, Watersheds, Ecosystems, Tundra vegetation, Plant ecology, Hydrogeochemistry, Water chemistry, Nutrient cycle, United States—Alaska—North Slope

50-4848

Nutrient availability and uptake by tundra plants.

Schimel, J.P., Kielland, K., Chapin, F.S., III, Landscape function and disturbance in arctic tundra. Ecological studies, Vol.120. Edited by J.F. Reynolds and J.D. Tenhunen, Berlin, Springer-Verlag, 1996, p.203-221, Refs. p.218-221.

DLC QH105.A4L36 1996

Tundra vegetation, Tundra soils, Plant ecology, Plant physiology, Nutrient cycle, Soil microbiology, Soil chemistry, United States—Alaska—North Slope

50-4849

Landscape patterns of carbon dioxide exchange in tundra ecosystems.

Oberbauer, S.F., et al, Landscape function and disturbance in arctic tundra. Ecological studies, Vol.120. Edited by J.F. Reynolds and J.D. Tenhunen, Berlin, Springer-Verlag, 1996, p.223-256, Refs. p.252-256.

DLC QH105.A4L36 1996

Tundra vegetation, Tundra soils, Tundra climate, Plant ecology, Plant physiology, Soil chemistry, Soil air interface, Nutrient cycle, United States—Alaska—North Slope

50-4850

Control of tundra methane emission by microbial oxidation.

Whalen, S.C., Reeburgh, W.S., Reimers, C.E., Landscape function and disturbance in arctic tundra. Ecological studies, Vol.120. Edited by J.F. Reynolds and J.D. Tenhunen, Berlin, Springer-Verlag, 1996, p.257-274, Refs. p.272-274.

DLC QH105.A4L36 1996

Tundra vegetation, Tundra soils, Tundra climate, Plant ecology, Plant physiology, Soil air interface, Soil microbiology, Soil chemistry, Nutrient cycle, Global warming

50-4851

Dynamics of dissolved and particulate carbon in an arctic stream.

Oswood, M.W., Irons, J.G., III, Schell, D.M., Landscape function and disturbance in arctic tundra. Ecological studies, Vol.120. Edited by J.F. Reynolds and J.D. Tenhunen, Berlin, Springer-Verlag, 1996, p.275-289, Refs. p.287-289.

DLC QH105.A4L36 1996

Tundra vegetation, Tundra soils, Tundra climate, Plant ecology, Plant physiology, Streams, Ecosystems, Hydrogeochemistry, Water chemistry, Nutrient cycle, United States—Alaska—North Slope

50-4852

Patch and landscape models of arctic tundra: potentials and limitations.

Reynolds, J.F., et al, Landscape function and disturbance in arctic tundra. Ecological studies, Vol.120. Edited by J.F. Reynolds and J.D. Tenhunen, Berlin, Springer-Verlag, 1996, p.293-324, Refs. p.319-324.

DLC QH105.A4L36 1996

Tundra vegetation, Tundra soils, Plant ecology, Plant physiology, Ecosystems, Hydrologic cycle, Nutrient cycle, Computerized simulation, United States—Alaska—North Slope

50-4853

Modeling dry deposition of dust along the Dalton Highway.

Lamprecht, R., Graber, W., Landscape function and disturbance in arctic tundra. Ecological studies, Vol.120. Edited by J.F. Reynolds and J.D. Tenhunen, Berlin, Springer-Verlag, 1996, p.325-345, 35 refs.

DLC QH105.A4L36 1996

Air pollution, Dust, Environmental impact, Tundra vegetation, Plant ecology, Mathematical models, United States—Alaska—North Slope

50-4854

Modeling decomposition in arctic ecosystems.

Moorhead, D.L., Reynolds, J.F., Landscape function and disturbance in arctic tundra. Ecological studies, Vol.120. Edited by J.F. Reynolds and J.D. Tenhunen, Berlin, Springer-Verlag, 1996, p.347-367, Refs. p.363-367.

DLC QH105.A4L36 1996

Tundra vegetation, Tundra soils, Tundra climate, Plant ecology, Ecosystems, Litter, Soil microbiology, Biomass, Nutrient cycle, Decomposition, Computerized simulation

50-4855

Hydrological controls on ecosystem gas exchange in an arctic landscape.

Ostendorf, B., Quinn, P., Beven, K., Tenhunen, J.D., Landscape function and disturbance in arctic tundra. Ecological studies, Vol.120. Edited by J.F. Reynolds and J.D. Tenhunen, Berlin, Springer-Verlag, 1996, p.369-386, 39 refs.

DLC QH105.A4L36 1996

Tundra vegetation, Tundra soils, Tundra climate, Plant ecology, Plant physiology, Vegetation patterns, Biomass, Nutrient cycle, Water balance, Hydrologic cycle, Computerized simulation, United States—Alaska—North Slope

50-4856

Road-related disturbances in an arctic watershed: analyses by a spatially explicit model of vegetation and ecosystem processes.

Leadley, P.W., Li, H., Ostendorf, B., Reynolds, J.F., Landscape function and disturbance in arctic tundra. Ecological studies, Vol.120. Edited by J.F. Reynolds and J.D. Tenhunen, Berlin, Springer-Verlag, 1996, p.387-415, Refs. p.413-415.

DLC QH105.A4L36 1996

Highway planning, Dust, Air pollution, Environmental impact, Environmental protection, Tundra vegetation, Tundra soils, Plant ecology, Plant physiology, Vegetation patterns, Soil erosion, Soil conservation, Computerized simulation, United States—Alaska—North Slope

50-4857

Ecosystem response, resistance, resilience, and recovery in arctic landscapes: progress and prospects.

Tenhunen, J.D., Reynolds, J.F., Landscape function and disturbance in arctic tundra. Ecological studies, Vol.120. Edited by J.F. Reynolds and J.D. Tenhunen, Berlin, Springer-Verlag, 1996, p.419-428, 34 refs.

DLC QH105.A4L36 1996

Tundra vegetation, Tundra soils, Environmental impact, Ecosystems, Plant ecology, Soil conservation, Regional planning, Research projects

50-4858

Molecules on ice.

Clary, D.C., *Science*, Mar. 15, 1996, 271(5255), p.1509, 9 refs.

Atmospheric composition, Chemical composition, Ozone, Models

Following a review of progress made since 1985 in understanding the chemical processes leading to atmospheric ozone depletion, the author comments on a computer model recently developed at the University of Colorado, showing how HCl sticks to ice. He concludes that this sequence of events provides a good example of how an applied problem can stimulate basic research in the laboratory and on the computer.

50-4859

Molecular dynamics simulation of hydrochloric acid ionization at the surface of stratospheric ice.

Gertner, B.J., Hynes, J.T., *Science*, Mar. 15, 1996, 271(5255), p.1563-1566, Numerous refs.

Stratosphere, Atmospheric composition, Clouds (meteorology), Ozone, Ice crystals

Molecular dynamics simulations were used to study the acid ionization of hydrochloric acid (HCl) at the basal plane surface of ice at 190 K, as a model for the acid ionization process in antarctic polar stratospheric clouds (PSCs). Initial conditions for HCl placement within the top bilayer of the ice lattice were selected on the basis of relevant dynamic equilibrium adsorption-desorption conditions. Free energy changes calculated for the first step in the stepwise acid ionization mechanism ranged from -5.8 to -6.7 kilocalories per mole for various likely initial conditions. These results indicate that acid

ionization is thermodynamically favorable and that this process has important implications for ozone depletion mechanisms involving PSCs. (Auth.)

50-4860

Geographic names of the Antarctic. Second edition 1995.

Alberts, F.G., ed, Washington, D.C., U.S. National Science Foundation, 1995, 834p., PB96-134 887.

Geography, Gazetteers, Antarctica

The new edition of this gazetteer contains 12,710 names approved by the United States Board on Geographic Names and the Secretary of the Interior for features in Antarctica and the area extending northward to the Antarctic Convergence. Included in this geographic area, the antarctic region, are the off-lying South Shetland Islands, the South Orkney Islands, the South Sandwich Islands, South Georgia, Bouvetøya, Heard Island, and the Balleny Islands. These names have been approved for use by U.S. Government agencies. This publication, which supersedes previous Board gazetteers or lists for the area, contains names approved as recently as Dec. 1994.

50-4861

Dynamic deformation characteristics of undisturbed riverbed gravels.

Yasuda, N., Ohta, N., Nakamura, A., *Canadian geotechnical journal*, Apr. 1996, 33(2), p.237-249, With French summary. 21 refs.

Soil tests, Soil freezing, Artificial freezing, Cryogenics, Soil strength, Frozen ground mechanics, Dynamic properties, Deformation, Shear modulus, Gravel, Sampling

50-4862

Influence of the properties of porous media on the durability of frozen calcareous rocks. [Influence des propriétiés du milieu poreux sur la durabilité au gel des roches calcaires]

Bellanger, M., Remy, J.M., Homand, F., *Canadian geotechnical journal*, Apr. 1996, 33(2), p.339-349, With French summary. 32 refs.

Concrete aggregates, Concrete durability, Rock fills, Construction materials, Porosity, Soil freezing, Frozen rocks, Artificial freezing, Thermal stresses, Frost action, Frost resistance, Models

50-4863

Field estimation of water-ice phase composition of permafrost samples using a calorimetric method.

Fortier, R., Allard, M., Sheriff, F., *Canadian geotechnical journal*, Apr. 1996, 33(2), p.355-362, With French summary. 15 refs.

Soil tests, Geocryology, Thermal conductivity, Frost mounds, Profiles, Stratigraphy, Frozen ground thermodynamics, Permafrost thermal properties, Ice water interface, Phase transformations, Unfrozen water content, Temperature measurement, Temperature effects

50-4864

New estimates of organic matter reserves and net primary productivity of the North American tundra ecosystems.

Gilmanov, T.G., Oechel, W.C., *Journal of biogeography*, July-Sep. 1995, 22(4-5), Global Change and Terrestrial Ecosystem Science Conference, Woods Hole, MA, May 23-27, 1994, p.723-741, 70 refs.

Tundra vegetation, Global change, Forest ecosystems, Forest tundra, Landscape types, Tundra soils, Organic soils, Plant ecology, Biomass, Geochemical cycles, Sampling

50-4865

Possible impacts of global warming on tundra and boreal forest ecosystems: comparison of some biogeochemical models.

Plöchl, M., Cramer, W., *Journal of biogeography*, July-Sep. 1995, 22(4-5), Global Change and Terrestrial Ecosystem Science Conference, Woods Hole, MA, May 23-27, 1994, p.775-783, 14 refs.

Biogeography, Global warming, Forest ecosystems, Taiga, Tundra vegetation, Vegetation patterns, Geochemical cycles, Soil air interface, Atmospheric composition, Vapor transfer, Carbon dioxide, Models

50-4866

Equilibrium response of soil carbon to climate change: empirical and process-based estimates.

McGuire, A.D., Melillo, J.M., Kicklighter, D.W., Joyce, L.A., *Journal of biogeography*, July-Sep. 1995, 22(4-5), Global Change and Terrestrial Ecosystem Science Conference, Woods Hole, MA, May 23-27, 1994, p.785-796, 44 refs.

Climatic changes, Global change, Greenhouse effect, Atmospheric composition, Carbon dioxide, Geochemical cycles, Forest ecosystems, Soil chemistry, Organic soils, Soil air interface, Vapor diffusion, Greenhouse effect, Models

50-4867

Lipid geochemistry of the Kara Sea bottom sediments.

Beliaeva, A.N., Madureira, L.A.S., Eglinton, G., *Geochemistry international*, May 1996, 33(5), p.112-128, Translated from Geokhimia. 30 refs.

Oceanography, Bottom sediment, Geochemistry, Organic nuclei, Microbiology, Estuaries, Runoff, Sediment transport, Sampling, Classifications, Russia—Kara Sea

50-4868

Use of snowmobiles. [Utilisation des motos-neige]

Sarraz-Bournet, P., *Neige et avalanches*, Mar. 1996, No.73, p.8,32, In French with English summary.

Snow vehicles, Safety, Legislation, France

50-4869

Validation of avalanche forecasting systems. [Validation des systèmes de prévision des avalanches]

Bolognesi, R., *Neige et avalanches*, Mar. 1996, No.73, p.9-14,32, In French with English summary. 7 refs.

Avalanche forecasting, Avalanche mechanics, Mathematical models, Statistical analysis, Accuracy, Classifications

50-4870

Profession: cross country ski patrol. [Profession: pisteur secouriste]

Ours, L., *Neige et avalanches*, Mar. 1996, No.73, p.15-18,32, In French with English summary.

Safety, Avalanche forecasting, Skis, Warning systems, Snow surveys

50-4871

Surface ozone at high latitudes.

Theodorsen, A., Henriksen, K., Berstås, S., Ømes, H., Sirota, V., Basiliev, A., *Geophysical research letters*, Jan. 1, 1996, 23(1), p.77-80, 14 refs.

Polar atmospheres, Atmospheric boundary layer, Atmospheric composition, Decomposition, Aerosols, Air pollution, Ozone, Sampling, Environmental tests, Norway—Tromsø

50-4872

Dirty oil makes a feast for soil bacteria.

Kiernan, V., *New scientist*, Jan. 20, 1996, 149(2013), p.10.

Fuels, Oil spills, Oil recovery, Soil pollution, Snow impurities, Decomposition, Microbiology, Environmental protection, Environmental tests

An experiment is being conducted at McMurdo Station to test the viability of soil bacteria in the biodegradation of diesel fuel spills on this site. Soil reclamation tests using this technique are now in progress.

50-4873

Forecasting avalanche risks in France—assessment and perspective. [La prévision du risque d'avalanche en France—bilan et perspectives]

Pahaut, E., Giraud, G., *La Météorologie*, Dec. 1995, 8(12), p.46-57, In French with English summary. 18 refs.

Avalanche forecasting, Snow cover stability, Avalanche modeling, Simulation, Mathematical models, Meteorological data, Weather stations, Safety, France

50-4874

Size-dependent stratospheric droplet composition in lee wave temperature fluctuations and their potential role in PSC freezing.

Meilinger, S.K., et al, *Geophysical research letters*, Nov. 15, 1995, 22(22), p.3031-3034, 12 refs.

Polar atmospheres, Polar stratospheric clouds, Aerosols, Cloud physics, Freezing points, Heterogeneous nucleation, Ice vapor interface, Particle size distribution, Simulation

Rapid temperature fluctuations are shown to cause liquid $H_2SO_4/HNO_3/H_2O$ stratospheric aerosols to depart considerably from thermodynamic equilibrium. While HNO_3 uptake by larger droplets is diffusively hindered, small droplets can approach the composition of a pure binary HNO_3/H_2O solution with up to 52 wt% HNO_3, 48 wt% H_2O and very small amounts of H_2SO_4. The stoichiometry of these droplets is close to that of nitric acid trihydrate (NAT) and freezing experiments suggest that this could be a suitable pathway for the formation of frozen polar stratospheric clouds (PSCs) of type Ia. (Auth.)

50-4875

Limestone karst morphology in the Himalayas of Nepal and Tibet.

Waltham, A.C., *Zeitschrift für Geomorphologie.*, Mar. 1996, 40(1), p.1-22, With German and French summaries. 26 refs.

Geomorphology, Geological surveys, Mountains, Landforms, Landscape development, Geologic processes, Karst, Caves, Frost shattering, Periglacial processes, Nepal—Himalaya Mountains, Tibet—Himalaya Mountains

50-4876

Submerged terraces in the southwestern Barents Sea: origin and implications for the Late Cenozoic geological history.

Lebesbye, E., Vorren, T.O., *Marine geology*, Mar. 1996, 130(3-4), p.265-280, 72 refs.

Marine geology, Pleistocene, Isostasy, Ocean bottom, Geomorphology, Terraces, Seismic reflection, Profiles, Subsidence, Glacial erosion, Geochronology, Barents Sea

50-4877

Quaternary seismic stratigraphy of the North Sea Fan: glacially-fed gravity flow aprons, hemipelagic sediments, and large submarine slides.

King, E.L., Sejrup, H.P., Haflidason, H., Elverhøi, A., Aarseth, I., *Marine geology*, Mar. 1996, 130(3-4), p.293-315, 51 refs.

Marine geology, Pleistocene, Bottom sediment, Sediment transport, Glacial deposits, Mass flow, Quaternary deposits, Deltas, Seismic reflection, Profiles, Stratigraphy, Geochronology, North Sea

50-4878

Block field of Mount Gausta (Telemark, Norway): environment, geomorphic features and paleogeographic significance. [Le felsenmeer du mont Gausta (Telemark, Norvège): environnement, caractères morphologiques et significations paléogéographiques]

Sellier, D., *Géographie physique et Quaternaire*, 1995, 49(2), p.185-205, In French with English and German summaries. 65 refs.

Geocryology, Pleistocene, Slope processes, Periglacial processes, Glacial erosion, Rock mechanics, Sorting, Terraces, Cryoturbation, Periglacial processes, Frost action, Snowmelt, Geomorphology, Norway—Telemark

50-4879

Tephrostratigraphy and palynology of boreal and Atlantic peat sequences in the Massif Central, France. [Téphrostratigraphie et palynologie de tourbes du Boréal et de l'Atlantique dans le massif Central (France)]

Juvigné, E., Bastin, B., *Géographie physique et Quaternaire*, 1995, 49(2), p.207-216, In French with English and German summaries. 20 refs.

Paleoecology, Swamps, Peat, Magma, Stratigraphy, Palynology, Geochronology, Classifications, Geochemistry, France—Central Massif

50-4880

Late glacial sedimentation and history of the Lake Nipigon Basin, Ontario.

Lemoine, R.M., Teller, J.T., *Géographie physique et Quaternaire,* 1995, 49(2), p.239-250, With French and German summaries. 40 refs.

Pleistocene, Paleoecology, Glacial lakes, Drainage, Meltwater, Glacial deposits, Quaternary deposits, Lacustrine deposits, Sedimentation, Stratigraphy, Shoreline modification, Water level, Canada—Ontario

50-4881

Sedimentation in ice-dammed glacial Lake Assiniboine, Saskatchewan, and catastrophic drainage down the Assiniboine valley.

Wolfe, B., Teller, J.T., *Géographie physique et Quaternaire,* 1995, 49(2), p.251-263, With French and German summaries. 21 refs.

Pleistocene, Glacial lakes, Geomorphology, Meltwater, Lake bursts, Water erosion, Flooding, Quaternary deposits, Sedimentation, Lacustrine deposits, Stratigraphy, Canada—Saskatchewan

50-4882

Seasonal frost mounds of arctic beaches, Tuktoyaktuk Peninsula, Northwest Territories. [Buttes cryogènes saisonnières de plages arctiques, péninsule de Tuktoyaktuk, Territoires du Nord-Ouest]

Campeau, S., Héquette, A., *Géographie physique et Quaternaire,* 1995, 49(2), p.265-274, In French with English and German summaries. 38 refs.

Geocryology, Cryogenic structures, Landforms, Beaches, Arctic landscapes, Frost mounds, Periglacial processes, Structural analysis, Freezeup, Saturation, Degradation, Ice lenses, Seasonal variations, Canada—Northwest Territories—Tuktoyaktuk Peninsula

50-4883

Pleistocene slope deposits related to the Saint-Maurice Rhythmites, St. Lawrence Valley, Québec. [Dépôts de versant pléistocènes associés aux Rythmites du Saint-Maurice, vallée du Saint-Laurent, Québec]

Hétu, B., Occhietti, S., Richard, P.J.H., Larouche, A.C., *Géographie physique et Quaternaire,* 1995, 49(2), p.275-289, In French with English and German summaries. 50 refs.

Pleistocene, Quaternary deposits, Slope processes, Sedimentation, Stratigraphy, Paleoecology, Geochronology, Geomorphology, Microstructure, Canada—Saint Lawrence River

50-4884

Pollen content of Sangamonian Interglacial deposits, Ile aux Coudres, middle St. Lawrence Estuary, Québec. [Palynologie des sédiments de la fin de l'optimum climatique de l'Interglaciare Sangamonien île aux Coudres, estuaire du Saint-Laurent, Québec]

Clet, M., Occhietti, S., *Géographie physique et Quaternaire,* 1995, 49(2), p.291-304, In French with English and German summaries. 33 refs.

Pleistocene, Paleoclimatology, Paleoecology, Palynology, Deltas, Quaternary deposits, Stratigraphy, Classifications, Tundra vegetation, Vegetation patterns, Geochronology, Correlation, Canada—Saint Lawrence Estuary

50-4885

Developmental conditions of the Farnham bog, Québec. [Conditions du développement de la tourbière de Farnham, Québec]

Lavoie, M., Larouche, A.C., Richard, P.J.H., *Géographie physique et Quaternaire,* 1995, 49(2), p.305-316, In French with English and German summaries. 47 refs.

Paleoecology, Swamps, Peat, Quaternary deposits, Sedimentation, Soil formation, Palynology, Classifications, Vegetation patterns, Revegetation, Stratigraphy, Geochronology, Canada—Quebec—Farnham

50-4886

Annual net balance of North Cascade glaciers, 1984-94.

Pelto, M.S., *Journal of glaciology,* 1996, 42(140), p.3-9, 15 refs.

Glaciology, Climatology, Glacial hydrology, Glacier oscillation, Glacier mass balance, Glacier ablation, Glacier surveys, Snow trenches, Seasonal variations, Snow water equivalent, Correlation, United States—Washington

50-4887

Measurement of ice-sheet topography using satellite-radar interferometry.

Joughin, I., Winebrenner, D.P., Fahnestock, M., Kwok, R., Krabill, W., *Journal of glaciology,* 1996, 42(140), p.10-22, 27 refs.

Glaciology, Ice sheets, Glacier mass balance, Height finding, Glacier flow, Spaceborne photography, Synthetic aperture radar, Topographic surveys, Topographic features, Radar echoes, Sensor mapping, Image processing, Correlation

50-4888

Thermal regime of sub-polar glaciers mapped by multi-frequency radio-echo sounding.

Björnson, H., et al, *Journal of glaciology,* 1996, 42(140), p.23-32, 37 refs.

Glaciology, Glacier surveys, Glacial hydrology, Ice temperature, Stratification, Subglacial observations, Thermal regime, Temperature measurement, Radio echo soundings, Sensor mapping, Reflectivity, Ice water interface, Bedrock, Profiles

50-4889

VLF surface-impedance measurements for ice-depth mapping—an assessment of some commonly encountered interference effects.

Thiel, D.V., James, D., Johnson, P., *Journal of glaciology,* 1996, 42(140), p.33-36, 5 refs.

Glaciology, Glacier thickness, Geophysical surveys, Magnetometers, Radio echo soundings, Electrical resistivity, Scattering, Ice dielectrics, Crevasses, Electric fields, Accuracy, Boundary value problems

50-4890

Case for cold-base continental ice sheets—a transient thermal model.

Heine, J.T., McTigue, D.F., *Journal of glaciology,* 1996, 42(140), p.37-42, 27 refs.

Glaciology, Ice sheets, Land ice, Pleistocene, Glacier formation, Ice temperature, Bottom ice, Glacier beds, Ice solid interface, Ice melting, Thermal regime, Ice heat flux, Profiles, Mathematical models, Thermodynamics

50-4891

Theory of glacial erosion, transport and deposition as a consequence of subglacial sediment deformation.

Boulton, G.S., *Journal of glaciology,* 1996, 42(140), p.43-62, 47 refs.

Glaciology, Theories, Glacier oscillation, Glacial geology, Glacial erosion, Glacier beds, Ice solid interface, Deformation, Sediment transport, Mathematical models, Lithology

50-4892

Microwave emission from density-stratified antarctic firn at 6 cm wavelength.

West, R.D., Winebrenner, D.P., Tsang, L., Rott, H., *Journal of glaciology,* 1996, 42(140), p.63-76, 22 refs.

Glaciology, Ice sheets, Ice structure, Snow density, Firn stratification, Radiometry, Scattering, Wave propagation, Ice optics, Brightness, Polarization (waves), Mathematical models, Antarctica—Veststraumen Glacier

Previous observations have shown spatial covariances between microwave emission from antarctic firn at 6 cm wavelength, physical firn temperature and firn-density stratification. Such observations motivate analysis of the physics underlying such covariances and, based on that understanding, to develop estimation methods for firn temperature and layering parameters. The authors present a model for 6 cm emission from firn in which density, and therefore dielectric permittivity, varies randomly in discrete layers with mean thicknesses on the order of centimeters. The model accounts for depth profiles of the physical temperature, mean density and variance of random density fluctuations from layer to layer. Emission-model predictions are compared with ground-based observations at four diverse sites in Antarctica which span a range of accumulation rates and other parameters. At two sites, layered-medium emission-model predictions based on the most probable input parameters (i.e. with no model tuning) agree with observations to within 3.5% for incidence angles ≤50°. Corresponding figures for the other two sites are 7.5% and 10%. However, uncertainties in the input parameters are substantial due to the limited length and depth resolution of the characterization data. (Auth. mod.)

50-4893

Distributed surface energy-balance model for a small valley glacier. I. Development and testing for Haut Glacier d'Arolla, Valais, Switzerland.

Arnold, N.S., Willis, I.C., Sharp, M.J., Richards, K.S., Lawson, W.J., *Journal of glaciology,* 1996, 42(140), p.77-89, 31 refs.

Glaciology, Glacial hydrology, Glacier heat balance, Glacier mass balance, Surface energy, Albedo, Mountain glaciers, Glacier ablation, Water storage, Runoff, Mathematical models, Topographic effects, Switzerland—Haut Glacier d'Arolla

50-4894

Shear margins in glaciers and ice sheets.

Raymond, C., *Journal of glaciology,* 1996, 42(140), p.90-102, 20 refs.

Glaciology, Ice sheets, Ice mechanics, Glacier flow, Viscous flow, Basal sliding, Ice deformation, Velocity measurement, Rheology, Shear stress, Ice solid interface, Topographic effects, Mathematical models, Antarctica—Siple Coast

Analytical and numerical techniques are used to examine the flow response of a sloped slab of power-law fluid (power n) subjected to basal boundary conditions that vary spatially across the flow direction, as for example near an ice-stream margin with planar basal topography. The primary assumption is that basal shear stress is proportional to the basal speed times a spatially variable slip resistance. The ratio of mean basal speed to the speed originating from shearing through the thickness, denoted as r, gives a measure of how slippery the bed is. The principal conclusion is that a localized disturbance in slip resistance affects the basal stress and speed in a zone spread over a greater width of the flow. The consequence for a shear zone above a sharp jump in slip resistance is that the shearing is spread out over a boundary layer with a width proportional to R_n. For an ice stream caused by a band of low slip resistance with a half-width of wH, the margins influence velocity and stress in the central part of the band depending on R_n in comparison to w. Three regimes can be identified, which for n=3 are quantified as follows: low r defined as R_3<0.1w, for which the central flow is essentially unaffected by the margins and the driving stress is supported entirely by basal drag; high r defined as R_3>1w, for which the boundary layers from both sides bridge across the full flow width and the driving stress in the center is supported almost entirely by side drag; intermediate r, for which the driving stress in the center is supported by a combination of basal and side drag. (Auth. mod.)

50-4895

Internal and basal ice changes near the grounding line derived from radio-echo sounding.

Uratsuka, S., Nishio, F., Mae, S., *Journal of glaciology,* 1996, 42(140), p.103-109, 19 refs.

Glaciology, Ice shelves, Glacial geology, Ice structure, Radio echo soundings, Grounded ice, Ice bottom surface, Ice solid interface, Scattering, Glacier beds, Topographic effects, Antarctica—Sør Rondane Mountains

Evidence of changing basal and internal ice properties near the grounding line was derived from airborne radio-echo-sounder observations of the ice sheet around the Sør Rondane Mountains. From the trailing figure of the bottom-echo signal, the roughness of the ice bottom near the grounding line was inferred. Results show that the specular components of scattering begin to appear on the ice-shelf side of the grounding line. Furthermore, double-trip echoes were observed with a strong scattering in the shelf area, and their boundary of occurrence was very close to the grounding line. This is evidence of interaction between ice and sea water at the bottom of the ice shelf. In most of the area around the mountains, internal echoes were observed continuously, but they were not found at or close to the ice shelf. The boundary between the appearance and disappearance of internal-layer echoes is distinct, and occurs 20-30 km inland from the grounding line. These results suggest that some major change may occur in the internal ice on the inland side of the grounding line. (Auth. mod.)

50-4896

Quiescent-phase evolution of a surge-type glacier: Black Rapids Glacier, Alaska, U.S.A.

Heinrichs, T.A., Mayo, L.R., Echelmeyer, K.A., Harrison, W.D., *Journal of glaciology,* 1996, 42(140), p.110-122, 28 refs.

Glaciology, Mountain glaciers, Glacier oscillation, Glacier surges, Glacier mass balance, Glacier flow, Velocity measurement, Glacier thickness, Ice deformation, Statistical analysis, United States—Alaska—Black Rapids Glacier

50-4897

Flux of debris transported by ice at three Alaskan tidewater glaciers.

Hunter, L.E., Powell, R.D., Lawson, D.E., MP 3823, *Journal of glaciology*, 1996, 42(140), p.123-135, 58 refs.

Glaciology, Glacier flow, Glacial geology, Shores, Ice solid interface, Sediment transport, Grounded ice, Glacier beds, Moraines, Calving, Ice rafting, Ice sampling, United States—Alaska—Glacier Bay

The stability of a tidewater terminus is controlled by glacial dynamics, calving processes and sedimentary processes at the grounding line. An investigation of grounding-line sediment dynamics and morainal-bank sediment budgets in Glacier Bay, AK, U.S.A., has yielded data that enable one to determine the debris fluxes of Grand Pacific, Margerie nd Muir Glaciers. Debris flux ranges from 10^5 to 10^6 m^3/a, one to two orders of magnitude lower than the glacifluvial sediment fluxes. Combined, these fluxes represent the highest yields known for glacierized basins. Large debris fluxes reflect the combined effects of rapid glacier flow, driven by the maritime climate of southeast Alaska, and highly erodible bedrock. Englacial-debris distribution is affected by valley width and relief, both of which control the availability of sediment. The number of tributaries controls the distribution and volume of debris in englacial and supraglacial moraines. At the terminus, iceberg-rafting removes up to two orders by magnitude more sediment from the ice-proximal environment than is deposited by melt-out or is dumped during calving events. Rough estimates of the sediment flux by deforming beds suggests that soft-bed deformation may deliver up to an order of magnitude more sediment to the terminus than is released from within the glacier ice. (Auth. mod.)

50-4898

Variation of snow, winter precipitation and winter air temperature during the last century at Nagaoka, Japan.

Nakamura. T., Shimizu, M., *Journal of glaciology*, 1996, 42(140), P.136-140, 11 refs.

Precipitation (meteorology), Climatology, Snow accumulation, Snow depth, Air temperature, Snow surveys, Periodic variations, Statistical analysis, Correlation, Meteorological factors, Japan—Nagaoka

50-4899

Surface morphology and backscattering of ice-ridge sails in the Baltic Sea.

Manninen, A.T., *Journal of glaciology*, 1996, 42(140), p.141-156, 27 refs.

Sea ice, Optical properties, Surface roughness, Pressure ridges, Orientation, Backscattering, Topographic effects, Physical properties, Statistical analysis, Models

50-4900

Controls on glacier surging in Svalbard.

Hamilton, G.S., Dowdeswell, J.A., *Journal of glaciology*, 1996, 42(140), p.157-168, 36 refs.

Glaciology, Glacier surveys, Glacier surges, Ice mechanics, Ice solid interface, Lithology, Glacial geology, Distribution, Statistical analysis, Indexes (ratios), Correlation, Forecasting, Norway—Spitsbergen

50-4901

Observations of pressure effects on the creep of ice single crystals.

Cole, D.M., MP 3824, *Journal of glaciology*, 1996, 42(140), p.169-175, 17 refs.

Ice mechanics, Glaciology, Basal sliding, Ice creep, Ice crystals, Ice solid interface, Strain tests, Plastic deformation, High pressure tests, Simulation

Glaciological experiments performed on ice single crystals oriented for basal slip indicate that the steady-state creep rate is only marginally affected by confining pressure up to 19 MPa. at a constant absolute temperature of 263 K. The observations contradict earlier work at similar pressures and the disparity is examined in terms of experimental errors.

50-4902

Submersible remotely operated vehicles (ROVs) for investigations of the glacier-ocean-sediment interface.

Dowdeswell, J.A., Powell, R.D., *Journal of glaciology*, 1996, 42(140), p.176-183, 10 refs.

Glaciology, Oceanographic surveys, Ice shelves, Ice water interface, Remote sensing, Vehicles, Design, Subsurface investigations, Subglacial observations, Imaging, Performance, Antarctica—Mackay Glacier

Submersible remotely operated vehicles (ROVs) are valuable research tools for data collection in dangerous or inaccessible environments associated with glaciers terminating in the sea. At tidewater ice cliffs, iceberg calving makes close approaches for extended time periods by manned vessels dangerous. ROVs can be operated from relatively safe distances (hundreds of meters); they can also descend to considerably greater depths (hundreds rather than tens of meters) than scuba diving permits. They can provide data on glacier grounding-line and sea-floor morphology and water-column characteristics (e.g. salinity, turbidity, current velocity). They are also used for diving under floating glacier tongues and ice shelves where no other access is possible. They can be fitted with a variety of oceanographic sensors, imaging sensors, tracking devices and water and sediment samplers, making them versatile research instruments that can supply qualitative and quantitative data for process studies in logistically difficult environments. (Auth.)

50-4903

Sampling-rate effects on the properties of dye breakthrough curves from glaciers.

Nienow, P.W., Sharp, M.J., Willis, I.C., *Journal of glaciology*, 1996, 42(140), p.184-189, 25 refs.

Glaciology, Glacial hydrology, Subglacial drainage, Water transport, Dispersions, Velocity measurement, Detection, Sampling, Accuracy

50-4904

Supraglacial sediment accumulations and large englacial water conduits at high elevations in Mýrdalsjökull, Iceland.

Näslund, J.O., Hassinen, S., *Journal of glaciology*, 1996, 42(140), p.190-192, 2 refs.

Glaciology, Glacial geology, Glacial hydrology, Subglacial drainage, Meltwater, Sedimentation, Subglacial caves, Geomorphology, Iceland

50-4905

Snow and ice control in North America.

Perry, A.H., Nanninga, J., Highway meteorology. Edited by A.H. Perry and L.J. Symons, London, E & FN Spoon, 1991, p.69-76, 4 refs.

DLC QC981.H5919

Road maintenance, Winter maintenance, Ice control, Snow removal, Salting, Weather forecasting

50-4906

Snow-drift modelling and control.

Ring, S.L., Highway meteorology. Edited by A.H. Perry and L.J. Symons, London, E & FN Spoon, 1991, p.77-90, 23 refs.

DLC QC981.H5919

Road maintenance, Winter maintenance, Snowdrifts, Blowing snow, Snow fences, Design, Wind factors, Topographic effects

50-4907

Snow surveying in Canada: a perspective.

Goodison, B.E., Glynn, J.E., Harvey, K.D., Slater, J.E., *Canadian water resources journal*, 1987, 12(2), p.27-42, With French summary. 39 refs.

Snow cover distribution, Snow surveys, Water supply, Snow courses, Snow hydrology, Sampling, Remote sensing, Radiometry, Snow water equivalent, Seasonal variations, Runoff forecasting, Standards, Accuracy, Canada

50-4908

Development of a portable ice-thickness measuring instrument.

Glynn, D.P., Joseph, J.C., Dedicated Electronics, Inc. Final report, Chester, Department of the Army, Feb. 1992, 40p., DACA-91-C-0030, For another version see 48-3118.

Floating ice, Ice cover thickness, Sensors, Antennas, Light scattering, Microwaves, Polarization (waves), Reflectivity, Measuring instruments, Portable equipment, Performance, Accuracy, Design

50-4909

Gravimetric investigation of permafrost on the Blockglaciers Murtèl-Corvatsch (Oberengadin). [Gravimetrische Untersuchnungen im Permafrost des Blockgletschers Murtèl-Corvatsch, (Oberengadin)]

Klingelé, E., Vonder Mühll, D., *Vermessung, Photogrammetrie, Kulturtechnik*, 1993, No.10, p.575-580, In German with French summary. 16 refs.

Alpine landscapes, Alpine glaciation, Rock glaciers, Permafrost structure, Gravity anomalies, Geophysical surveys, Topographic effects, Periglacial processes, Geologic structures, Mathematical models, Switzerland—Alps

50-4910

Climatology of high-latitude air pollution as illustrated by Fairbanks and Anchorage, Alaska.

Bowling, S.A., *Journal of climate and applied meteorology*, Jan. 1986, 25(1), p.22-34, 35 refs.

Atmospheric composition, Climatology, Atmospheric boundary layer, Air pollution, Aerosols, Ice fog, Wind factors, Air temperature, Temperature inversions, Diurnal variations, Photochemical reactions, United States—Alaska—Anchorage, United States—Alaska—Fairbanks

50-4911

Hail in southwestern France. I: Hailfall characteristics and hailstorm environment.

Dessens, J., *Journal of climate and applied meteorology*, Jan. 1986, 25(1), p.35-47, 35 refs.

Climatology, Hail, Ice storms, Hailstone structure, Damage, Periodic variations, Distribution, Turbulent boundary layer, Indexes (ratios), Statistical analysis, France

50-4912

Hail in southwestern France. II: Results of a 30-year hail prevention project with silver iodide seeding from the ground.

Dessens, J., *Journal of climate and applied meteorology*, Jan. 1986, 25(1), p.48-58, 28 refs.

Hail prevention, Ice storms, Damage, Climatology, Weather modification, Cloud seeding, Artificial nucleation, Ice crystal growth, Silver iodide, Smoke generators, Atmospheric boundary layer, Statistical analysis, France

50-4913

Observational and theoretical studies of solar radiation in arctic stratus clouds.

Herman, G.F., Curry, J.A., *Journal of climate and applied meteorology*, Jan. 1984, 23(1), p.5-24, 22 refs.

Clouds (meteorology), Cloud cover, Cloud physics, Optical properties, Polar atmospheres, Solar radiation, Radiation balance, Radiation absorption, Transmissivity, Aerial surveys, Radiometry, Probes, Profiles

50-4914

Role of January in the character of recent winters in the United States.

Diaz, H.F., *Journal of climate and applied meteorology*, Feb. 1984, 23(2), p.177-186, 25 refs.

Climatology, Synoptic meteorology, Air temperature, Seasonal variations, Weather observations, Winter, Snow cover distribution, Snow cover effect, Correlation, United States

50-4915

Frost-free record reconstruction for eastern Massachusetts, 1733-1980.

Baron, W.R., Gordon, G.A., Borns, H.W., Jr., Smith, D.C., *Journal of climate and applied meteorology*, Feb. 1984, 23(2), p.317-319, 14 refs.

Climatology, Meteorological data, Air temperature, Freezing indexes, Frost, Periodic variations, Weather observations, Statistical analysis, United States—Massachusetts

50-4916

Comments on "An apparent relationship between Eurasian spring snow cover and the advance period of the Indian summer monsoon".

Ropelewski, C.F., Robock, A., Matson, M., Dey, B., Bhanu Kumar, O.S.R.U., *Journal of climate and applied meteorology*, Feb. 1984, 23(2), p.341-345, Includes reply. 13 refs. For relevant paper see 37-3655.

Synoptic meteorology, Precipitation (meteorology), Climatology, Snow cover distribution, Snowmelt, Meteorological factors, Seasonal variations, Statistical analysis, Accuracy, India

50-4917

Comments on "Production of ice particles in clouds due to aircraft penetrations".

Mossrop, S.C., Hobbs, P.V., Rangno, A.L., *Journal of climate and applied meteorology*, Feb. 1984, 23(2), p.345-346, Includes reply. 7 refs. For pertinent paper see 37-4387.

Cloud physics, Supercooled clouds, Weather modification, Aircraft, Aircraft icing, Ice crystal growth, Ice nuclei, Detection, Accuracy

50-4918

HIPLEX-1: experimental design and response variables.

Smith, P.L., et al, *Journal of climate and applied meteorology*, Apr. 1984, 23(4), p.497-512, 29 refs.

Precipitation (meteorology), Cloud seeding, Cloud physics, Weather modification, Dry ice (trademark), Ice nuclei, Artificial nucleation, Ice crystal growth, Heterogeneous nucleation, Experimentation, Research projects

50-4919

HIPLEX-1: statistical evaluation.

Mielke, P.W., Jr., Berry, K.J., Dennis, A.S., Smith, P.L., Miller, J.R., Jr., Silverman, B.A., *Journal of climate and applied meteorology*, Apr. 1984, 23(4), p.513-522, 13 refs.

Precipitation (meteorology), Weather modification, Cloud seeding, Artificial nucleation, Cloud physics, Experimentation, Meteorological data, Statistical analysis, Classifications

50-4920

Physical interpretation of results from the HIPLEX-1 experiment.

Cooper, W.A., Lawson, R.P., *Journal of climate and applied meteorology*, Apr. 1984, 23(4), p.523-540, 40 refs.

Precipitation (meteorology), Weather modification, Cloud seeding, Cloud physics, Artificial nucleation, Ice crystal growth, Snow pellets, Ice nuclei, Particle size distribution, Water content, Aggregates

50-4921

Deep orographic cloud structure and composition derived from comprehensive remote sensing measurements.

Sassen, K., *Journal of climate and applied meteorology*, Apr. 1984, 23(4), p.568-583, 12 refs.

Clouds (meteorology), Storms, Cloud seeding, Cloud physics, Remote sensing, Radar echoes, Sounding, Radiometry, Lidar, Ice detection, Ice crystal optics, Supercooled clouds, Forecasting

50-4922

Physical characteristics of arctic stratus clouds.

Tsay, S.C., Jayaweera, K., *Journal of climate and applied meteorology*, Apr. 1984, 23(4), p.584-596, 31 refs.

Polar atmospheres, Climatology, Atmospheric boundary layer, Clouds (meteorology), Cloud physics, Microstructure, Profiles, Marine atmospheres, Cloud droplets, Distribution, Water content, Aerial surveys, Ice cover effect, Beaufort Sea

50-4923

Electrical atomization of water dripping from melting ice pieces and its possible role in thunderstorms.

Kamra, A.K., Ahire, D.V., *Journal of climate and applied meteorology*, May 1984, 23(5), p.845-847, 15 refs.

Precipitation (meteorology), Thunderstorms, Cloud electrification, Cloud physics, Charge transfer, Aerosols, Water vapor, Snow pellets, Ice crystal structure, Meltwater, Ice water interface, Simulation

50-4924

Apparatus for in situ measurement of CO_2 diffusion coefficient of snowpack.

Kominami, Y., Takami, S., *Seppyo*, Mar. 1996, 58(2), p.107-116, In Japanese with English summary. 7 refs.

Snow air interface, Snow permeability, Snow density, Snow composition, Snow cover effect, Snow survey tools, Snow samplers, Vapor diffusion, Carbon dioxide

50-4925

Economic evaluation of snow-removal systems in an urban area with heavy snowfall. Part 2: benefit-cost calculations of snow-removing channels.

Morohashi, K., Umemura, T., *Seppyo*, Mar. 1996, 58(2), p.117-123, In Japanese with English summary. 7 refs.

Snow removal, Urban planning, Road maintenance, Cost analysis, Japan

50-4926

Development of machines for hydraulic transportation of snow. Part 4: solid fraction detector for stirring tank.

Murayama, K., Kagawa, Y., Sawamoto, K., Umemura, T., *Seppyo*, Mar. 1996, 58(2), 125-132, In Japanese with English summary. 5 refs.

Snow removal equipment, Slush, Drains, Water pipelines, Flow control

50-4927

Application of a heat balance method to long-term snowmelt runoff analysis.

Kurashima, E., Katoh, T., Satoh, K., *Seppyo*, Mar. 1996, 58(2), p.133-144, In Japanese with English summary. 27 refs.

Snow hydrology, Snowmelt, Snow air interface, Snow heat flux, Runoff forecasting, Mathematical models

50-4928

Report of avalanche accident at Pangka in 1995, Khumbu region, Nepal.

Yamada, T., et al, *Seppyo*, Mar. 1996, 58(2), p.145-155, In Japanese with English captions. 3 refs.

Avalanches, Avalanche tracks, Avalanche deposits, Snowstorms, Glacier surveys, Accidents, Rescue operations, Nepal

50-4929

Heavy snowfalls around Sapporo area, Hokkaido in the winter of 1995/1996—a preliminary report.

Kanemura, N., Kikuchi, K., *Seppyo*, Mar. 1996, 58(2), p.157-160, In Japanese with English summary.

Snowstorms, Snowfall, Snow depth, Records (extremes), Japan—Hokkaido

50-4930

For the control of blowing snow (1)—structure of blowing snow.

Takeuchi, M., *Seppyo*, Mar. 1996, 58(2), p.161-168, In Japanese with some English captions. 21 refs.

Blowing snow, Snow air interface, Snow erosion, Wind erosion, Ice crystal size, Particle size distribution

50-4931

Ice in Tokyo and antarctic ice.

Higashi, A., *Seppyo*, Mar. 1996, 58(2), p.169-178, In Japanese. 23 refs.

Lake ice, Ice crystal optics, Ice crystal structure, Ice crystal growth, Ice cores, Ice composition, Ice dating, Impurities, Volcanic ash, Cosmic dust, Paleoclimatology

A general review is presented of studies on Tyndall figures, that is, internal melt cavities resembling six-petalled flowers in ice crystals from a pond at Nagatoro town near Chichibu in Saitama Prefecture northwest of Tokyo, and microparticles, particularly volcanic ash and cosmic dust, in ice cores from Antarctica. The Tyndall figures in the Japanese pond ice and the microparticles in the antarctic ice cores are not directly compared but it is suggested that both may be used as indicators of past and predictors of future climate change.

50-4932

Recent molecular dynamics simulation studies on ice: growth mechanism of ice crystals from water at the molecular level.

Nada, H., Furukawa, Y., *Seppyo*, Mar. 1996, 58(2), p.179-180, In Japanese. 5 refs.

Ice crystal growth, Ice formation, Ice water interface, Water structure, Molecular structure, Molecular energy levels, Computerized simulation

50-4933

Simulation models of flow type and powder type avalanches examined by gravity currents.

Fukushima, Y., Hayakawa, N., Yamaguchi, T., *Seppyo*, May 1996, 58(3), p.205-214, In Japanese with English summary. 12 refs.

Avalanche modeling, Avalanche mechanics, Snow cover stability, Turbulent flow, Mathematical models

50-4934

Hydraulic conveying of snow and ice. Part 3: application of conductometric method to in-situ measurement of pipe flow.

Shirakashi, M., Kitahara, T., *Seppyo*, May 1996, 58(3), p.215-222, In Japanese with English summary. 8 refs.

Snow removal, Slush, Drains, Water pipelines, Pipe flow, Flow measurement, Flow control

50-4935

Factors affecting the stability of fall attitude of cone-like graupel.

Kajikawa, M., *Seppyo*, May 1996, 58(3), p.223-228, In Japanese with English summary. 16 refs.

Snow pellets, Falling snow, Hailstone growth

50-4936

Radiative characteristics in forest during snowmelt season.

Nakabayashi, H., Ishikawa, N., Kodama, Y., *Seppyo*, May 1996, 58(3), p.229-237, In Japanese with English summary. 12 refs.

Snowmelt, Snow air interface, Snow heat flux, Snow cover effect, Radiation balance, Forest land, Forest canopy, Vegetation factors

50-4937

Recent works on snow sonde.

Abe, O., *Seppyo*, May 1996, 58(3), p.239-245, In Japanese. 23 refs.

Snow surveys, Snow samplers, Snow strength, Snow cover stability, Snow density, Snow temperature, Snow stratigraphy

50-4938

Recent molecular dynamics simulation studies on ice: vibrational spectra of ice.

Itoh, H., *Seppyo*, May 1996, 58(3), p.251-253, In Japanese. 9 refs.

Ice crystal structure, Ice crystal growth, Ice spectroscopy, Molecular structure, Molecular energy levels

50-4939

More words on snow countermeasures for National Highway 17. [Kokudo 17-go yuki taisaku yowa]

Abe, T., *Seppyo*, May 1996, 58(3), p.262-265, In Japanese. 2 refs.

Avalanche engineering, Snow fences, Snowsheds, Road maintenance, Japan

50-4940

Postglacial development of river valleys in the middle part of the northern slope of Pomerania. [Postglacjalny rozwój dolin rzek środkowej części północnego skłonu Pomorza]

Florek, W., Słupsk, Poland, Wyższa Szkoła Pedagogiczna, 1991, 238p., In Polish with extensive English summary. Refs. p.200-235.

DLC GB 588.68.P7 F58 1991

Valleys, River flow, Meltwater, Sediments, Paleoclimatology, Water level, Sediments, Channels (waterways), Rivers, Thermokarst lakes, Poland, Germany

50-4941

Periglacial elements in the geological structure and relief of the northern part of the Częstochowa upland. [Elementy peryglacjalne w budowie geologicznej i rzeźbie północnej części wyżyny Częstochowskiej]

Kobojek, S., Acta geographica lodziensia, No.60, / Łódź, Zakład Narodowy im. Ossolińskich, 1990, 115p. + 8 l. of photographs, In Polish with extensive summary in English; table of contents and captions in English. Refs. p.105-109.

DLC GB 588.68.P7 K63 1990

Periglacial processes, Pleistocene, Landscape development, Quaternary deposits, Lithology, Glacial geology, Geocryology, Sediments, Slope processes, Valleys, Poland—Częstochowa, Poland—Olsztyn

50-4942

Raw oil and gas bedrock potential of organic matter sediments (in the example of Okhotsk Sea troughs). [Iskhodnyĭ neftegazomaterinskiĭ potentsial organicheskogo veshchestva osadkov (na primere vpadin Okhotskogo moria)]

Gretskaia, E.V., Vladivostok, Dal'nevostochnoe otdelenie AN SSSR, 1990, 111p., In Russian. Refs. p.106-111.

DLC QE516.5.G73 1990

Bedrock, Natural gas, Crude oil, Natural resources, Bottom sediment, Sediments, Okhotsk Sea

50-4943

Sites used for disposal of radioactive waste in Alaska. *U.S. General Accounting Office. Fact sheet for congressional requesters. Nuclear health and safety*, July 1994, 29p., GAO/RCED-94-130FS.

DLC TD898.12.A4 U55 1994

Radioactive wastes, Waste disposal, Environmental impact, United States—Alaska

50-4944

Atmospheric water vapour budget over Greenland.

Calanca, P., *Zürcher Geographische Schriften*, 1994, No.55, 115p., Refs. p.103-108.

DLC QC925.1.A1G833 1994

Water vapor, Vapor transfer, Data processing, Moisture transfer, Polar atmospheres, Precipitation (meteorology), Atmospheric circulation, Greenland

50-4945

Arktis 1993; report on the field phase with examples of measurements.

Brümmer, B., ed, *Zentrum für Meeres- und Klimaforschung. Berichte. Reihe A: Meteorologie*, 1993, No.11, 186p. + 84p. of appends., Refs. passim.

DLC QC994.8.A75 1993

Atmospheric circulation, Polar atmospheres, Air ice water interaction, Boundary layer, Radiometry, Expeditions, Icebreakers, Oceanographic ships, Cloud cover, Air masses, Greenland Sea, Norway—Spitsbergen

50-4946

Conception for the rehabilitation of transportation infrastructures in northern regions. [La conception et la réhabilitation des infrastructures de transport en régions nordiques]

Ladanyi, B., Québec. Ministére de Transports. Report RTQ-94-07, Québec, 1994, 123p., 174 refs.

Roads, Cold weather construction, Permafrost bases, Permafrost physics, Soil freezing, Phase transformations, Soil stabilization, Frozen ground mechanics, Soil classification, Frost action, Thermal analysis

50-4947

Miocene to recent history of the western Altiplano in northern Chile revealed by lacustrine sediments of the Lauca Basin (18°15'-18°40'S/69°30'-69°05'W).

Kött, A., Gaupp, R., Wörner, G., *Geologische Rundschau*, Dec. 1995, 84(4), p.770-780, 11 refs.

Pleistocene, Quaternary deposits, Lacustrine deposits, Altiplanation, Sedimentation, Stratigraphy, Tectonics, Geochronology, Geomorphology, Correlation, Chile

50-4948

Stratigraphy and paleomagnetism of a 3-km-thick Miocene lava pole in the Mjoifjördur area, eastern Iceland.

Kristjansson, L., Gudmundsson, A., Haraldsson, H., *Geologische Rundschau*, Dec. 1995, 84(4), p.813-830, 23 refs.

Pleistocene, Geological surveys, Magma, Stratigraphy, Magnetic surveys, Geomagnetism, Earth crust, Tectonics, Geochronology, Correlation, Iceland

50-4949

Freeze-thaw durability testing of oversanded bridge floor concrete.

Ouyang, C.S., Iowa Department of Transportation. Project Development Division. Materials Department Report 95-5, Ames, June 1995, 7p.

Road maintenance, Bridges, Floors, Concrete slabs, Concrete admixtures, Physical properties, Freeze thaw tests, Concrete durability, Sands

50-4950

Plant communities of the Bol'šoj Čivyrkuj River Valley, Barguzinskij Range, East Siberia.

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50-4951

Influence of pocket gophers on the status of nutrients in alpine soils.

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Tundra soils, Alpine landscapes, Ecosystems, Landscape development, Geomorphology, Nutrient cycle, Aeration, Soil erosion, Pit and mound topography, Soil tests, Geochemistry, Environmental impact

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Atmospheric aerosol in the Finnish Arctic: particle number concentrations, chemical characteristics, and source analysis.

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Atmospheric composition, Subpolar regions, Air pollution, Climatology, Sampling, Aerosols, Particle size distribution, Statistical analysis, Seasonal variations, Environmental tests, Finland—Lapland

50-4953

Deposition around a coal-fired power station during a wintertime precipitation event.

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Climatology, Precipitation (meteorology), Air pollution, Atmospheric composition, Aerosols, Snow composition, Snow impurities, Falling snow, Scavenging, Sampling, Sounding

50-4954

Acid pollutants in air and precipitation/deposition at the Sudeten Mountains, Poland.

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Precipitation (meteorology), Climatology, Air pollution, Atmospheric composition, Cloud physics, Aerosols, Sampling, Snow composition, Snow impurities, Scavenging, Ion density (concentration), Environmental tests, Poland—Sudeten Mountains

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Snowpack quality as an indicator of air pollution in Finnish Lapland and the Kola Peninsula, NW Russia.

Lindroos, A.J., Derome, J., Niska, K., *Water, air, and soil pollution*, Dec. 1995, 85(4), International Conference on Acidic Deposition: Science & Policy, 5th, Göteborg, Sweden, June 26-30, 1995. Proceedings, Vol.4. Acid reign '95?, p.2185-2190, 16 refs.

Precipitation (meteorology), Climatology, Subpolar regions, Air pollution, Aerosols, Atmospheric composition, Snow composition, Snow impurities, Sampling, Environmental tests, Correlation, Finland—Lapland, Russia—Kola Peninsula

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Precipitation (meteorology), Climatology, Environmental tests, Snowfall, Air pollution, Snow composition, Aerosols, Snow impurities, Sampling, Snow water equivalent, Ion density (concentration), Statistical analysis, Finland

50-4957

Analysis of long-range transported acid aerosols in rime found at Kyushu mountainous regions, Japan.

Nagafuchi, O., Suda, R., Mukai, H., Koga, M., Kodama, Y., *Water, air, and soil pollution*, Dec. 1995, 85(4), International Conference on Acidic Deposition: Science & Policy, 5th, Göteborg, Sweden, June 26-30, 1995. Proceedings, Vol.4. Acid reign '95?, p.2351-2356, 14 refs.

Precipitation (meteorology), Climatology, Air pollution, Aerosols, Hoarfrost, Snow composition, Snow impurities, Sampling, Isotope analysis, Ion density (concentration), Environmental tests, Atmospheric circulation, Japan—Kyushu

50-4958

Cryo-ultramicrotomy of individual latex particles for examination of internal morphology.

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Scanning electron microscopy, Cryogenics, Polymers, Frozen liquids, Thin sections, Laboratory techniques, Stereophotography, Microstructure

50-4959

Electromagnetic induction sounding of sea ice thickness.

Kovacs, A., Diemand, D., Bayer, J.J., Jr., CR 96-06, *U.S. Army Cold Regions Research and Engineering Laboratory. Report*, June 1996, 8p., ADA-286 884, 13 refs.

Sea ice, Ice cover thickness, Remote sensing, Sounding, Electromagnetic prospecting, Cold weather performance, Electrical resistivity

Field results from a man-portable electromagnetic induction sounding instrument, with special plug-in data processing modules for the remote measurement of sea ice thickness, are discussed. The field trials indicate that the instrument was capable of estimating undeformed sea ice thickness, with a snow cover, generally within about 5% of the drill hole measured thicknesses from about 1.25 to 4.5 m. No ice under 1.25 m was sounded in this study. Instrument thickness determinations of multiyear sea ice over about 4.5 m thick showed larger deviation from the drill hole snow and ice thickness measurement. It is proposed that the undulating multiyear sea ice relief is the major cause of the EM deviation.

50-4960

Northern Sea Route: its development and evolving state of operations in the 1990s.

Mulherin, N.D., CR 96-03, *U.S. Army Cold Regions Research and Engineering Laboratory. Report*, Apr. 1996, 76p., ADA-310 144, Refs. p.59-62.

Ice navigation, Icebreakers, Marine transportation, Cost analysis, Economic analysis, Ports, Ice conditions, Sea ice, International cooperation, Russia, Russia—East Siberian Sea, Russia—Kara Sea, Russia—Laptev Sea, Northern Sea Route, Barents Sea, Chukchi Sea

The summer of 1991 marked the first time in recent history that Russia offered to escort ships of other countries across the Northern Sea Route (NSR). For moving cargo between the North Pacific region and Northern European ports, the NSR along Russia's northern coastline is between 35 and 60% shorter than the traditionally used routes through the Suez and Panama Canals. In addition to its shorter distance, there already exists an extensive port and shipping infrastructure, a current cargo base, and the potential for developing new markets in Russia and other northern areas. These incentives are attracting considerable attention from the international shipping community, including that portion servicing Alaskan and northwestern U.S. ports. This report is a general compilation of the historical usage, recent trade developments, the current regulatory climate, the physical environment, the ports and navigational infrastructure, cost factors, and practical considerations that may shape future U.S. interests in the route.

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Comparison of microwave radiometric data and modeled snowpack conditions for Dye 2, Greenland.

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Meetings, Organizations, Research projects, International cooperation, Regional planning

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Cold weather construction, Cold weather performance, Buildings, Weatherproofing, Vapor barriers, Permafrost beneath structures, Human factors engineering, Regional planning

50-4964

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Snowfall, Snow cover stability, Avalanche forecasting, Weather forecasting, Computerized simulation

50-4965

Melting characteristics along a bundle of horizontal heated cylinders immersed in a liquid ice layer.

Yamada, M., Fukusako, S., Morizane, H., Kim, M.H., Scheider, W., *Experimental thermal and fluid science,* Apr. 1996, 12(3), p.305-312, 20 refs.

Ice physics, Ice water interface, Ice air interface, Slush, Phase transformations, Solutions, Ice melting, Thermodynamic properties, Fluid dynamics, Aeration, Heat transfer coefficient

50-4966

Chemical characterization of individual aerosol particles in central Siberia.

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Polar atmospheres, Air pollution, Atmospheric composition, Air masses, Air flow, Aerosols, Classifications, Sampling, Microanalysis, X ray analysis, Environmental impact, Environmental tests, Seasonal variations, Russia—Siberia

50-4967

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50-4968

Shell to the fore as Chukchi opens up. *Offshore engineer,* June 1988, p.10.

Petroleum industry, Offshore drilling, Oil wells, Ocean bottom, Economic development, Cost analysis, Chukchi Sea

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Precipitation (meteorology), Cloud seeding, Weather modification, Hail prevention, Cloud physics, Artificial nucleation, Silver iodide, Aerosols, Turbulent diffusion, Radar echoes, Ice detection, Stratification, Reflectivity

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Radiometric observations of supercooled liquid water within a split front over Sierra Nevada.

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50-4973

Encyclopedia of climate and weather. New York, Oxford University Press, 1996, 2 vol., Refs. passim. For selected papers see 50-4614, 50-4615 and 50-4974 through 50-5002.

DLC QC854.E523

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Albedo.

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Drewry, D.J., Encyclopedia of climate and weather, Vol.1. Edited by S.H. Schneider, New York, Oxford University Press, 1996, p.39-41, 7 refs.

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Ice sheets, Physical properties, Glacier mass balance, Terminology, Dictionaries, Antarctica

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Avalanches.

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Climatology, Clouds (meteorology), Cloud physics, Ice crystals, Terminology, Dictionaries

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Cloud physics.

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Climatology, Cloud physics, Terminology, Dictionaries

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Cores.

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Paleoclimatology, Ice sheets, Ice cores, Ice dating, Terminology, Dictionaries

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Frost.

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50-4984

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Climatology, Climatic changes, Greenhouse effect, Terminology, Dictionaries

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Glaciology, Ice sheets, Terminology, Dictionaries

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Precipitation (meteorology), Hailstone structure, Hailstone growth, Snow pellets, Terminology, Classifications, Dictionaries

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Precipitation (meteorology), Hail, Ice storms, Climatology, Terminology, Dictionaries

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Little Ice Ages.
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Polar atmospheres, Climatology, Air pollution, Climatic changes, Ozone, Degradation, Stratosphere, Terminology, Dictionaries, Antarctica
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Sea ice distribution, Oceanography, Climatology, Ice cover effect, Air ice water interaction, Terminology, Dictionaries
This encyclopedia entry surveys sea ice distribution and dynamics in arctic and antarctic oceans.

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Climatology, Precipitation (meteorology), Snowstorms, Terminology, Dictionaries

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Taiga climate.
Bonan, G.B., Encyclopedia of climate and weather, Vol.2. Edited by S.H. Schneider, New York, Oxford University Press, 1996, p.738-741, 9 refs.
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Climatology, Tundra climate, Heat balance, Terminology, Dictionaries

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Greenhouse effect and the global environmental changes. [Efekt cieplarniany a globalne zmiany środowiska przyrodniczego]
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Rapid glaciation of slightly supercooled cumulus clouds.

Mason, B.J., *Royal Meteorological Society. Quarterly journal B,* Jan. 1996, 122(530), p.357-365, 15 refs.

Precipitation (meteorology), Cloud physics, Supercooled clouds, Ice nuclei, Snow pellets, Ice crystal growth, Glaze, Cracking (fracturing), Snow crystal structure, Ice vapor interface, Mathematical models

50-5011

Vortex dynamics and the evolution of water vapour in the stratosphere of the southern hemisphere.

Lahoz, W.A., et al, *Royal Meteorological Society. Quarterly journal B,* Jan. 1996, 122(530), p.423-450, 24 refs.

Polar atmospheres, Climatology, Stratosphere, Atmospheric circulation, Air masses, Wind direction, Radiometry, Water vapor, Turbulent diffusion, Advection

The seasonal evolution of water vapor in the stratosphere of the Southern Hemisphere is studied by using water vapor measurements made by the Microwave Limb Sounder on the Upper Atmosphere Research Satellite. This evolution is interpreted with the aid of meteorological fields produced at the UK Meteorological Office by data assimilation. The processes governing the distribution of water vapor are clarified by focusing on the physical and dynamical conditions in and around the antarctic stratospheric polar vortex. Sustained diabatic descent in the vortex causes isopleths of water vapor mixing ratio to dip down markedly in the polar vortex, strengthening radial gradients of water vapor in the westerly jet, while stretching and folding of material lines in anticyclones adjacent to the polar vortex leads to a widening zone of weak horizontal gradients of water vapor. The circulation is discussed in terms of the dynamics of interacting vortices. Two different flow regimes are identified: (a) mid and late southern winter, with a strong polar vortex and one or more eastward-travelling anticyclones; and (b) spring, with a relatively weak polar vortex and a quasi-stationary anticyclone. The phenomenon of merger of anticyclones, already observed in the stratosphere of the Northern Hemisphere, is documented for the Southern Hemisphere. (Auth. mod.)

50-5012

Tunnel valley genesis.

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Geomorphology, Glacial geology, Glacial hydrology, Landforms, Tunnels, Subglacial drainage, Meltwater, Water erosion. Sediment transport, Deformation, Flooding

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Applications of freshwater diatoms to geographical research.

Moser, K.A., MacDonald, G.M., Smol, J.P., *Progress in physical geography,* Mar. 1996, 20(1), p.21-52, Refs. p.48-52.

Paleoecology, Vegetation patterns, Algae, Paleoclimatology, Climatic changes, Limnology, Quaternary deposits, Glacial geology, Lacustrine deposits, Stratigraphy, Classifications, Correlation

50-5014

Parameterization of surface albedo for sea ice and its snow cover.

Barry, R.G., *Progress in physical geography,* Mar. 1996, 20(1), p.63-79, Refs. p.76-79.

Climatology, Sea ice, Surface properties, Snow cover, Albedo, Surface energy, Heat balance, Snow optics, Ice optics, Ice models, Mathematical models, Climatic factors

The factors determining the albedo of sea ice and its snow cover, in both arctic and antarctic environments, including spectral characteristics, are reviewed. The thickness, properties and fractional cover of snow are of general importance. During freeze-up, ice thickness is a major determinant, as in summer is the extent and depth of melt ponds. The effects of sky conditions and surface impurities are also examined. *In situ* and remote-sensing data to validate theoretical and model results are discussed. The current parameterizations adopted in atmospheric General Circulation Models are compared and new directions described. (Auth. mod.)

50-5015

Liquid and ice cloud microphysics in the CSU General Circulation Model. Part I: model description and simulated microphysical processes.

Fowler, L.D., Randall, D.A., Rutledge, S.A., *Journal of climate,* Mar. 1996, 9(3), p.489-529, Refs. p.527-529.

Climatology, Precipitation (meteorology), Cloud physics, Cloud dissipation, Hydrologic cycle, Water vapor, Moisture transfer, Turbulent diffusion, Ice vapor interface, Snowfall, Advection, Mathematical models, Forecasting

50-5016

Liquid and ice cloud microphysics in the CSU General Circulation Model. Part II: impact on cloudiness, the Earth's radiation budget, and the general circulation of the atmosphere.

Fowler, L.D., Randall, D.A., *Journal of climate,* Mar. 1996, 9(3), p.530-560, 48 refs.

Climatology, Cloud physics, Cloud cover, Ice optics, Snow optics, Optical properties, Radiation balance, Radiation absorption, Atmospheric circulation, Mathematical models, Simulation

50-5017

Liquid and ice cloud microphysics in the CSU General Circulation Model. Part III: sensitivity to modeling assumptions.

Fowler, L.D., Randall, D.A., *Journal of climate,* Mar. 1996, 9(3), p.561-586, 22 refs.

Climatology, Cloud physics, Precipitation (meteorology), Radiation balance, Snowfall, Ice vapor interface, Supercooled clouds, Optical properties, Snow crystal growth, Phase transformations, Simulation, Mathematical models

50-5018

Downwelling longwave fluxes at continental surfaces—a comparison of observations with GCM simulations for the global land-surface radiation budget.

Garratt, J.R., Prata, A.J., *Journal of climate,* Mar. 1996, 9(3), p.646-655, 21 refs.

Polar atmospheres, Climatology, Atmospheric boundary layer, Cloud cover, Solar radiation, Radiation balance, Radiance, Models, Correlation, Antarctica—Amundsen-Scott Station

Previous work suggests that general circulation (global climate) models have excess net radiation at land surfaces, apparently due to overestimates in downwelling shortwave flux and underestimates in upwelling longwave flux. Part of this excess, however, may be compensated for by an underestimate in downwelling longwave flux. Long term observations of the downwelling longwave component at several land stations in Europe, the United States, Australia and Antarctica suggest that climate models (four are used, as in previous studies) underestimate this flux component on an annual basis by up to 10 W/m^2, yet with low statistical significance. It is probable that the known underestimate in boundary-layer air temperature contributes to this, as would low model cloudiness and neglect of minor gases such as methane, nitrogen oxide, and the freons. The bias in downwelling longwave flux, together with those found earlier for downwelling shortwave and upwelling longwave fluxes, are consistent with the model bias found previously for net radiation. All annually averaged fluxes and biases are deduced for global land as a whole. (Auth.)

50-5019

Thermodynamic stability of hydrates for ethane, ethylene, and carbon dioxide.

Kvamme, B., Tanaka, H., *Journal of physical chemistry,* May 4, 1995, 99(18), p.7114-7119, 21 refs.

Hydrates, Clathrates, Ice physics, Ice vapor interface, Natural gas, Carbon dioxide, Low temperature tests, Thermodynamic properties, Molecular structure, Molecular energy levels, Stability, Degradation, Simulation

50-5020

Fire-induced pH rise in a naturally acid hill-top lake, southern Finland: a paleoecological survey.

Korhola, A., Virkanen, J., Tikkanen, M., Blom, T., *Journal of ecology,* Apr. 1996, 84(2), p.257-265, 55 refs.

Limnology, Paleoecology, Subarctic landscapes, Lake water, Sedimentation, Lacustrine deposits, Drill core analysis, Plankton, Water chemistry, Turbulent diffusion, Chemical properties, Geochemistry, Aerosols, Forest fires, Finland

50-5021

Forecasting earth surface temperature for the optimal application of frost protection methods.

Krasovitski, B., Kimmel, E., Amir, I., *Journal of agricultural engineering research,* Feb. 1996, 63(2), p.93-101, 14 refs.

Agriculture, Plants (botany), Frost protection, Frost forecasting, Air temperature, Surface temperature, Radiant cooling, Soil air interface, Heat transfer, Mathematical models, Computer programs

50-5022

Mean amplitude of the OH...O hydrogen bond in ice and liquid water.

Iijima, T., *Journal of molecular structure,* Feb. 20, 1996, Vol.376, p.525-529, 24 refs.

Ice physics, Hydrogen bonds, Ice structure, Water structure, Molecular structure, X ray diffraction, Ice spectroscopy, Spectra, Molecular energy levels

50-5023

Analytical modeling of glacier dynamics.

Bahr, D.B., *Mathematical geology,* Feb. 1996, 28(3), p.229-251, 18 refs.

Glaciology, Glacier flow, Ice mechanics, Stress concentration, Shear stress, Ice deformation, Velocity measurement, Boundary value problems, Accuracy, Mathematical models

50-5024

Stochastic model for the permeability characteristics of saturated cemented porous media undergoing freezing.

Kralj, B., Pande, G.N., *Transport in porous media,* Mar. 1996, 22(3), p.345-357, 20 refs.

Porous materials, Cements, Freezing points, Phase transformations, Ice water interface, Frost action, Saturation, Water flow, Permeability, Damage, Thermal expansion, Mathematical models, Statistical analysis

50-5025

Statistical approach to source determination of lithic and Fe oxide grains: an example from the Alpha Ridge, Arctic Ocean.

Darby, D.A., Bischof, J.F., *Journal of sedimentary research,* May 1996, 66(3), p.599-607, 47 refs.

Oceanography, Marine deposits, Sedimentation, Pleistocene, Sediment transport, Glacier oscillation, Ice rafting, Origin, Lithology, Geochemistry, Sampling, Drill core analysis, Statistical analysis, Arctic Ocean

50-5026

Synoptic look at research on snow topics. [Regard synoptique sure la recherche en matière nivale]

Toupin, J., *Le climat,* May 1994, 12(1), p.103-112, In French. Refs. p.106-112.

Bibliographies, Snow cover, Snow hydrology, Snow physics, Snow cover effect, Climatology

50-5027

Stable isotope and radiocarbon balances of two Tibetan lakes (Sumxi Co, Longmu Co) from 13,000 BP.

Fontes, J.C., Mélières, F., Gilbert, E., Qing, L., Gasse, F., *Quaternary science reviews,* 1993, Vol.12, p.875-887, 38 refs.

Paleoclimatology, Climatic changes, Global change, Quaternary deposits, Lacustrine deposits, Radioactive age determination, Carbon isotopes, Isotope analysis, Geochronology, Geochemistry, China—Tibet

50-5028

Hydrological bibliography of Switzerland for 1992. [Hydrologische Bibliographie der Schweiz für das Jahr 1992]

Sevruk, B., Caflisch, A., *Bibliographia scientiae naturalis Helvetica,* 1992, Vol.68, p.146-173, In German.

Bibliographies, Hydrology, Snow hydrology, Mountain glaciers, Snow cover distribution, Alpine glaciation, Snow physics, Ice physics, Precipitation (meteorology), Switzerland

50-5029

Morphometric analysis of the marginal ice zone north-west of Spitsbergen taken by SPOT panchromatic imagery. [Analyse morphométrique de la zone marginale de la banquise polarie au nord-ouest du Spitsberg à partir de l'imagerie SPOT panchromatique]

Kergomard, C., *Société Française de Photogrammétrie et de Télédétection. Bulletin,* 1989, No.115, p.17-20, In French with English summary. 7 refs.

Spaceborne photography, Sea ice distribution, Ice floes, Ice edge, Young ice, Image processing, Radiometry, Norway—Spitsbergen

50-5030

Damming James Bay: I. Potential impacts on coastal climate and the water balance.

Rouse, W.R., Woo, M.K., Price, J.S., *Canadian geographer,* 1992, 36(1), p.2-7, With French summary. 20 refs.

Hydrologic cycle, Wetlands, Littoral zone, Plant ecology, Subarctic landscapes, Dams, Shores, Climatic changes, Water supply, Water balance, Water transport, Flow control, Environmental impact, Mathematical models, Canada—Ontario—James Bay

50-5031

Damming James Bay: II. Impacts on coastal marshes.

Price, J.S., Woo, M.K., Rouse, W.R., *Canadian geographer,* 1992, 36(1), p.8-13, With French summary. 12 refs.

Shores, Subarctic landscapes, Dams, Wetlands, Littoral zone, Water transport, Flow control, Water chemistry, Environmental impact, Geochemistry, Turbulent diffusion, Salinity, Sampling, Canada—Ontario—James Bay

50-5032

1000-year record of winter precipitation from northwestern New Mexico, USA: a reconstruction from tree-rings and its relation to El Niño and the Southern Oscillation.

D'Arrigo, R.D., Jacoby, G.C., *Holocene,* 1991, 1(2), p.95-101, 41 refs.

Climatology, Climatic changes, Precipitation (meteorology), Trees (plants), Age determination, Hydrologic cycle, Atmospheric circulation, Periodic variations, United States—New Mexico

50-5033

ERS-1 altimetry on the Greenland ice sheet: preliminary investigations of annual variations.

Andersen, O.B., *Geophysical research letters,* July 15, 1994, 21(15), p.1655-1658, 14 refs.

Ice sheets, Glacier surveys, Height finding, Spacecraft, Radar echoes, Topographic surveys, Seasonal variations, Spectra, Data processing, Greenland

50-5034

Arctic 'greenhouse effect'.

Blanchet, J.P., Girard, E., *Nature,* Sep. 29, 1994, 371(6496), p.383, 9 refs.

Polar atmospheres, Air pollution, Aerosols, Climatology, Greenhouse effect, Global warming

50-5035

Formation of De geer moraines deposited subglacially, central Québec.

Beaudry, L.M., Prichonnet, G., *Géographie physique et Quaternaire,* 1995, 49(3), p.337-361, With French and German summaries. 87 refs.

Glacial geology, Moraines, Landforms, Geomorphology, Quaternary deposits, Glacial deposits, Soil structure, Lithology, Meltwater, Subglacial drainage, Sediment transport, Ice solid interface, Models, Canada—Quebec

50-5036

Relative sea level in the area of Matane (Québec) from deglaciation to present day. [Le niveau marin relatif dans la région de Matane (Québec), de la déglaciation à nos jours]

Dionne, J.C., Coll, D., *Géographie physique et Quaternaire,* 1995, 49(3), p.363-380, In French with English and German summaries. 79 refs.

Pleistocene, Glaciation, Glacier oscillation, Sea level, Estuaries, Deltas, Terraces, Stratigraphy, Shoreline modification, Geomorphology, Canada—Quebec—Matane River

50-5037

Pleistocene stratigraphy of the Athabasca River valley region, Rocky Mountains, Alberta.

Levson, V.M., Rutter, N.W., *Géographie physique et Quaternaire,* 1995, 49(3), p.381-399, With French and German summaries. 79 refs.

Pleistocene, Alpine landscapes, Quaternary deposits, Moraines, Sedimentation, Stratigraphy, Lithology, Glacial geology, Glacial deposits, Canada—Alberta—Rocky Mountains

50-5038

Paleohydrological changes in Jura (France), and climatic oscillations around the North Atlantic from Allerød to Preboreal.

Magny, M., *Géographie physique et Quaternaire,* 1995, 49(3), p.401-408, With French and German summaries. 48 refs.

Paleoclimatology, Pleistocene, Alpine glaciation, Climatic changes, Lacustrine deposits, Water level, Quaternary deposits, Geochronology, Correlation, Radioactive age determination, France—Jura Mountains

50-5039

Foraminiferal evidence of Younger Dryas age cooling on the British Columbia shelf.

Patterson, R.T., Guilbault, J.P., Thomson, R.E., Luternauer, J.L., *Géographie physique et Quaternaire,* 1995, 49(3), p.409-428, With French and German summaries. 84 refs.

Pleistocene, Paleoclimatology, Marine deposits, Paleoecology, Distribution, Quaternary deposits, Drill core analysis, Stratigraphy, Lithology, Sedimentation, Radioactive age determination, Canada—British Columbia—Queen Charlotte Sound

50-5040

Glaciers and global warming.

Koerner, R.M., Lundgaard, L., *Géographie physique et Quaternaire,* 1995, 49(3), p.429-434, With French and German summaries. 31 refs.

Climatology, Climatic changes, Global change, Global warming, Glacier oscillation, Glacial hydrology, Glacier mass balance, Ice cores, Snow impurities, Periodic variations, Correlation

50-5041

Identification of elements of fluvioglacial shapes characteristic of glacial outbursts. [Éléments d'identification des modelés fluvioglaciaires issus des débâcles glaciaires]

Robitaille, A., Dubois, J.M.M., *Géographie physique et Quaternaire,* 1995, 49(3), p.435-457, In French with English and German summaries. 103 refs.

Glacial hydrology, Glacial lakes, Lake bursts, River basins, Flooding, Sedimentation, Landforms, Geomorphology, Water erosion, Bedrock, Topographic features

50-5042

Eskers: an essay of bibliographic review. [Les eskers: essai de synthèse bibliographique]

Levasseur, D., *Géographie physique et Quaternaire,* 1995, 49(3), p. 459-479, In French with English and German summaries.

Bibliographies, Glacial geology, Glacial deposits, Glacial hydrology, Deltas, Geomorphology, Sedimentation, Lithology, Quaternary deposits, Subglacial drainage

50-5043

Freeze/thaw treatment on zone settling of waste activated sludges.

Chen, G.W., Chang, I.L., Hung, W.T., Lee, D.J., *Journal of environmental science and health,* Mar. 1996, A31(3), p.621-631, 21 refs.

Waste treatment, Sludges, Frozen liquids, Freeze thaw cycles, Freeze thaw tests, Particle size distribution, Dispersions, Capillarity, Density (mass/volume)

50-5044

Ten million year histories of obliquity and precession: the influence of the ice-age cycle.

Jiang, X.H., Peltier, W.R., *Earth and planetary science letters,* Mar. 1996, 139(1-2), p.17-32, 30 refs.

Pleistocene, Geologic processes, Viscosity, Isostasy, Paleoclimatology, Insolation, Ice sheets, Glacier oscillation, Ice loads, Ice volume, Mathematical models

50-5045

Distribution, abundance, biomass, and mineralization potential of the epibenthic megafauna of the Northeast Greenland shelf.

Piepenburg, D., Schmid, M.K., *Marine biology,* Apr. 1996, 125(2), p.321-332, 64 refs.

Marine biology, Ocean bottom, Bottom sediment, Polynyas, Ice cover effect, Ecosystems, Biomass, Sampling, Photointerpretation, Classifications, Distribution, Geochemistry, Greenland Sea

50-5046

Northumberland Strait bridge: analysis techniques and results.

Ghali, A., Tadras, G., Langohr, P.H., *Canadian journal of civil engineering,* Feb. 1996, 23(1), p.86-97, With French summary. 10 refs.

Bridges, Offshore structures, Superstructures, Pile structures, Piers, Static stability, Structural analysis, Ice loads, Ice solid interface, Dynamic loads, Design criteria, Canada—New Brunswick—Northumberland Strait

50-5047

Utilization of the relative rigidity concept to predict the failure of pipe systems under explosive loads.

Abd El Halim, A.O., Lau, D.T., Razaqpur, A.G., Winterink, J.A., *Canadian journal of civil engineering,* Feb. 1996, 23(1), p.107-116, With French summary. 24 refs.

Pipes (tubes), Pile structures, Tensile properties, Explosion effects, Static loads, Simulation, Ice models, Ice cores, Ice cracks, Correlation

50-5048

Borehole penetration and expansion devices for ice testing.

Ladanyi, B., *Canadian journal of civil engineering,* Feb. 1996, 23(1), p.157-164, With French summary. 34 refs. For another version see 46-4981.

Ice mechanics, Sea ice, Ice wedges, Frozen ground mechanics, Ice strength, Ice creep, Penetration tests, Borehole instruments, Rheology

50-5049

Interpretation of in situ borehole ice strength measurement tests.

Masterson, D.M., *Canadian journal of civil engineering,* Feb. 1996, 23(1), p.165-179, With French summary. 51 refs. For another version see 46-4983.

Ice mechanics, Ice strength, Sea ice, Borehole instruments, Penetration tests, Stress concentration, Ultimate strength, Compressive properties, Tensile properties, Ice solid interface

50-5050

Interpretation of field measurements for ice engineering applications.

Gold, L.W., *Canadian journal of civil engineering,* Feb. 1996, 23(1), p.180-185, With French summary. 23 refs. For another version see 46-4987.

Ice mechanics, Ice strength, Mechanical properties, Mechanical tests, Penetration tests, Borehole instruments, Strain tests, Ice solid interface, Laboratory techniques, Accuracy, Design criteria

50-5051

Development of the original ice borehole jack.

Masterson, D.M., Graham, W., *Canadian journal of civil engineering*, Feb. 1996, 23(1), p.186-192, With French summary. 14 refs. For another version see 46-4979.

Sea ice, Ice strength, Bearing strength, Ice mechanics, Rheology, Ice solid interface, Compressive properties, Mechanical tests, Borehole instruments, Test equipment, Design

50-5052

Iceberg-structure interaction probabilities for design.

Fuglem, M., Jordaan, I., Crocker, G., *Canadian journal of civil engineering*, Feb. 1996, 23(1), p.231-241, With French summary. 19 refs.

Sea ice distribution, Oceanography, Icebergs, Drift, Offshore structures, Ships, Fracture zones, Ice navigation, Ice forecasting, Statistical analysis, Seasonal variations, Ice solid interface, Simulation, Design criteria

50-5053

Freeze-thaw studies on concrete structural elements.

Ganga Rao, H.V.S., Thippeswamy, H.K., Raju, P.R., *Transporation research record*, 1993, No.1393, p.39-46, 14 refs.

Concrete slabs, Reinforced concretes, Steel structures, Composite materials, Floors, Concrete durability, Concrete strength, Freeze thaw tests, Strain tests, Thermal stresses, Thermal expansion, Tensile properties, Temperature effects

50-5054

Modelling and calculating the thermoplastic state of frozen ground. [Modelirovanie i raschet termoplasticheskogo sostoianiia merzlykh porod]

Dubina, M.M., Cherniakov, IU.A., Novosibirsk, Nauka, 1991, 119p., In Russian. 72 refs.

DLC TA710.D83 1991

Frozen ground mechanics, Rheology, Soil water, Mathematical models, Phase transformations, Ground thawing, Plastic deformation

50-5055

Anthropogenic climate change and reduction of water resources: adaptation issues related to the economy in Kazakhstan.

Golubtsov, V.V., Li, V.I., Skotselias, I.I., Adapting to climate change: an international perspective. Edited by J.B. Smith, et al, New York, Springer, 1996, p.225-231, 6 refs.

DLC QC981.8.C5 A32 1996

Climatic changes, Environmental impact, Water reserves, Models, Runoff, Water balance, Ground thawing, Kazakhstan

50-5056

Global climate change adaptation: examples from Russian boreal forests.

Dixon, R.K., Krankina, O.N., Kobak, K.I., Adapting to climate change: an international perspective. Edited by J.B. Smith, et al, New York, Springer, 1996, p.359-373, 42 refs.

DLC QC981.8.C5 A32 1996

Climatic changes, Environmental impact, Global change, Models, Forest ecosystems, Forest land, Forestry, Russia

50-5057

Permafrost and global warming: strategies of adaptation.

Anisimov, O.A., Nelson, F.E., Adapting to climate change: an international perspective. Edited by J.B. Smith, et al, New York, Springer, 1996, p.440-449, 27 refs.

DLC QC981.8.C5 A32 1996

Climatic changes, Environmental impact, Global change, Global warming, Permafrost preservation, Permafrost distribution, Mapping

50-5058

Ocean pollution in the Arctic north and the Russian Far East: proceedings from the ocean pollution session of the conference "Bridges of Science Between North America and the Russian Far East," Vladivostok, Russia, September 1, 1994.

Kirk, E.J., ed, Washington, D.C., American Association for the Advancement of Science, 1995, 163p., Refs. passim. For selected papers see 50-5059 through 50-5063. For abstracts of the proceedings from the conference see 49-1161.

DLC GC401.O26 1995

Radioactive wastes, Waste disposal, Water pollution, Environmental impact

50-5059

Modelling the release to the environment in the Kara Sea from radioactive waste in the dumped reactor compartment of the icebreaker *Lenin*.

Timms, S.J., Lynn, N.M., Mount, M.E., Sivintsev, IU.V., Ocean pollution in the Arctic North and the Russian Far East: proceedings from the *Ocean Pollution* session of the conference "Bridges of Science Between North America and the Russian Far East," Vladivostok, Russia, September 1, 1994. Edited by E.J. Kirk., Washington, D.C., American Association for the Advancement of Science, 1995, p.1-27, 12 refs.

DLC GC401.O26 1995

Radioactive wastes, Waste disposal, Water pollution, Environmental impact, Icebreakers, Nuclear power, Models, International cooperation, Russia—Kara Sea, Russia—Novaya Zemlya

50-5060

Preliminary results of studies of industrial and nuclear contaminants in the Ob and Yenisey rivers and the Kara Sea to assess the environmental and human health risks in the Russian Arctic.

Champ, M.A., Brooks, J.M., Makeev, V.V., Wade, T.L., Kennicutt, M.C., II, Maskaran, M., Ocean pollution in the Arctic North and the Russian Far East: proceedings from the *Ocean Pollution* session of the conference "Bridges of Science Between North America and the Russian Far East," Vladivostok, Russia, September 1, 1994. Edited by E.J. Kirk., Washington, D.C., American Association for the Advancement of Science, 1995, p.28-65, 54 refs.

DLC GC401.O26 1995

Radioactive wastes, Waste disposal, Water pollution, Environmental impact, Radioactivity, Nuclear power, International cooperation, Barents Sea, Russia—Kara Sea, Russia—Ob' River, Russia—Yenisey River

50-5061

Radioecological studies of radioactive contaminants in Ussury Bay, Sea of Japan.

Soĭfer, V.N., Ocean pollution in the Arctic North and the Russian Far East: proceedings from the *Ocean Pollution* session of the conference "Bridges of Science Between North America and the Russian Far East," Vladivostok, Russia, September 1, 1994. Edited by E.J. Kirk., Washington, D.C., American Association for the Advancement of Science, 1995, p.66-82, 1 ref.

DLC GC401.O26 1995

Radioactive wastes, Waste disposal, Water pollution, Environmental impact, Radioactivity, Models, Japan, Sea, Russia—Ussuriyskiy Bay

50-5062

Distribution of cesium-137 in Bering and Chukchi Sea marine sediments.

Cooper, L.W., Grebmeier, J.M., Larsen, I.L., Jerde, E.A., Ocean pollution in the Arctic North and the Russian Far East: proceedings from the *Ocean Pollution* session of the conference "Bridges of Science Between North America and the Russian Far East," Vladivostok, Russia, September 1, 1994. Edited by E.J. Kirk., Washington, D.C., American Association for the Advancement of Science, 1995, p.83-96, 2 refs.

DLC GC401.O26 1995

Radioactive isotopes, Marine deposits, Sediments, Radioactive wastes, Waste disposal, Ecosystems, Environmental impact, Water pollution, Soil pollution, Radioactivity, Fallout, Bering Sea, Chukchi Sea, United States—Alaska—Saint Lawrence Island

50-5063

Comparative study of bottom sediment pollution in Lianyungang Harbor, China and Vladivostok Harbor, Russia.

Tkalin, A.V., Ocean pollution in the Arctic North and the Russian Far East: proceedings from the *Ocean Pollution* session of the conference "Bridges of Science Between North America and the Russian Far East," Vladivostok, Russia, September 1, 1994. Edited by E.J. Kirk., Washington, D.C., American Association for the Advancement of Science, 1995, p.97-108, 26 refs.

DLC GC401.O26 1995

Bottom sediment, Hydrocarbons, Waste disposal, Ecosystems, Environmental impact, Water pollution, China—Lianyungang, Russia—Vladivostok

50-5064

Aircraft icing handbook. Wichita, Kansas, Gates Learjet Corporation, 1993, 3 vols. (var. p.), ADA-276 499, Refs. passim. For earlier version see 46-4435.

Aircraft icing, Ice prevention, Countermeasures, Safety, Cold weather performance, Standards, Ice formation, Helicopters, Heat transfer, Propellers, Ice detection, Ice accretion, Ice adhesion

50-5065

Ice bubbles confirm big chill.

Kerr, R.A., *Science*, June 14, 1996, 272(5268), p.1584-1585.

Ice cores, Bubbles, Climatic changes, Isotope analysis, Greenland

50-5066

Polar clouds and sulfate aerosols.

Tolbert, M.A., *Science*, June 14, 1996, 272(5268), p.1597, 17 refs.

Atmospheric composition, Chemical composition, Aerosols, Polar stratospheric clouds

50-5067

Climate change during the last deglaciation in Antarctica.

Mayewski, P.A., et al, *Science*, June 14, 1996, 272(5268), p.1636-1638, 26 refs.

Climatic changes, Ice cores, Ice composition, Chemical composition, Glacier ablation, Antarctica—Victoria Land, Antarctica—Taylor Dome

Greenland ice core records provide clear evidence of rapid changes in climate in a variety of climate indicators. In this work, rapid climate change events in the Northern and Southern hemispheres are compared on the basis of an examination of changes in atmospheric circulation developed from two ice cores. High-resolution glaciochemical series, covering the period 10,000 to 16,000 years ago from a central Greenland ice core and a new site in East Antarctica display similar variability. These findings suggest that rapid climate change events occur more frequently in Antarctica than previously demonstrated. (Auth.)

50-5068

Melting of $H_2SO_4 \cdot H_2O$ particles upon cooling: implications for polar stratospheric clouds.

Koop, T., Carslaw, K.S., *Science*, June 14, 1996, 272(5268), p.1638-1641, 20 refs.

Atmospheric composition, Chemical composition, Aerosols, Polar stratospheric clouds

50-5069

Historical reconstruction of the earth's past atmospheric environment from Greenland and antarctic snow and ice cores.

Boutron, C.F., *Environmental reviews*, 1995, 3(1), p.1-28, With French summary. 107 refs.

Atmospheric composition, Aerosols, Ice cores, Antarctica—Byrd Station, Antarctica—Charlie, Dome, Antarctica—Vostok Station

After a brief description of the antarctic and Greenland ice caps, an overview is given of the procedures used in the field for collecting snow and ice from the surface down to great depths, followed by a discussion of techniques used to date and analyze the samples. The main results obtained to date are then presented, with special emphasis on the very recent. The analysis of the snow and ice layers deposited during the past few centuries, especially since the Industrial Revolution, has allowed us to assess clearly the impact human activity has had on the atmosphere for important constituents such as heavy metals, sulfur and nitrogen compounds, greenhouse gases, carbon and organic compounds, and artificial radionuclides. The analysis of ancient ice up to several hundred thousand years old has provided unique insight into the past natural changes that affected

the atmosphere during glacial-interglacial transitions, especially the temperature, greenhouse gases, soil- and sea-derived aerosols and heavy metals. (Auth. mod.)

50-5070

Ammonium salts as agents for melting of snow.

Abe, H., Aoyama, T., *Japan Patent Office. Patent,* Dec. 5, 1995, 4p., JP 95316545; JP 07316545.

Snow melting, Snow removal, Japan

50-5071

Method for melting snow and preventing freezing by using heat storing mixtures.

Kakiuchi, H., *Japan Patent Office. Patent,* Dec. 5, 1995, 5p., JP 95316535; JP 07316535.

Antifreezes, Snow melting, Heating, Storage, Japan

50-5072

Apparatus for generation of artificial fog by spraying of hot water on dry ice.

Walter, C., *France Patent Office. Patent,* Oct. 20, 1995, 12p., No.2718739.

Dry ice (trademark), Fog

50-5073

Correction of satellite radar altimeter data on ice-covered surfaces in Antarctica using an integrated Geographical Information System.

Cooper, A.P.R., Hinton, J.C., *International journal of remote sensing,* May 10, 1996, 17(7), p.1367-1376, 10 refs.

Remote sensing, Geophysical surveys, Ice sheets, Ice shelves, Slope orientation, Spaceborne photography, Radar echoes, Height finding, Topographic effects, Accuracy, Data processing, Antarctica—Alexander Island

The problem of correcting satellite altimeter measurements for errors introduced by topographic surfaces was chosen to test the capabilities of a prototype integrated geographical information system. A system to calculate and apply corrections to altimeter data has been implemented and tested using Geosat data from the Wilkins Ice Shelf, to the west of Alexander I., West Antarctica. The method used is presented here, with particular discussion of the suitability of the GIS as a platform for performing such corrections. (Auth.)

50-5074

Instructions for meteorological stations and posts, Vol.3, pt.1. Meteorological observations at stations.

USSR State Committee on Hydrometeorology and Environmental Control, Leningrad, 1985, 24p.

Precipitation (meteorology), Snow surveys, Snow cover distribution, Snow cover structure, Snow depth, Weather stations

50-5075

Guide to interpretation of avalanche bulletins published by the Federal Institute for the Study of Snow and Weissfluhjoch/Davos Avalanches. [Guide d'interprétation du bulletin d'avalanches publie par l'Institut fédéral pour l'étude del la neige et des avalanches Weissfluhjoch/Davos]

Meister, R., ed, Switzerland. Communication de l'Institut fédéral pour l'étude de la neige et des avalanches. No.49, Davos, Nov. 1993, 15p. + append., In French.

Avalanche forecasting, Safety, Classifications, Snow cover stability, Terminology, Switzerland—Alps

50-5076

Archive of digital data from the Defense Meteorological Satellite Program (DMSP).

Kroehl, H.W., Scharfen, G.R., Arrance, E.S., Goodman, S.J., International Conference on Interactive Information and Processing Systems for Meteorology, Oceanography, and Hydrology, 10th, Nashville, TN, Jan. 23-28, 1994. Preprint paper, Boston, American Meteorological Society, 1994, p.148-153, 7 refs.

Meteorology, Cloud physics, Oceanography, Climatology, Geophysical surveys, Spaceborne photography, Remote sensing, Sensors, Radiometry, Infrared reconnaissance, Data processing, Design

50-5077

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Bjørgo, E., Sandven, S., URSI Commission F Symposium, May 1994, 12p.

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Paleoclimatology, Climatic changes, Quaternary deposits, Lacustrine deposits, Sedimentation, Drill core analysis, Carbon isotopes, Isotope analysis, Radioactive age determination, Geochronology, China—Tibet

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Paleoclimatology, Climatic changes, Lacustrine deposits, Drill core analysis, Oxygen isotopes, Carbon isotopes, Isotope analysis, Radioactive age determination, Correlation, Geochronology, China—Tibet

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Paleoclimatology, Climatic changes, Precipitation (meteorology), Spaceborne photography, Topographic surveys, Lakes, Shoreline modification, Profiles, Water level, Statistical analysis, China—Tibet

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Paleoclimatology, Climatic changes, Quaternary deposits, Lacustrine deposits, Sedimentation, Drill core analysis, Profiles, Geochronology, Radioactive age determination, Correlation, China—Xinjiang

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Paleoclimatology, Climatic changes, Geomorphology, Tectonics, Earth crust, Sedimentation, Topographic effects, Loess, Geochronology, Correlation, China—Himalaya Mountains

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Pleistocene, Paleoclimatology, Climatic changes, Quaternary deposits, Glacial geology, Mountain glaciers, Glaciation, Moraines, Glacier oscillation, Tectonics, Geochronology, Pakistan—Karakoram Mountains

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Soil surveys, Soil classification, Soil composition, Soil chemistry, Soil analysis, Desert soils, Saline soils, Soil conservation, Land development, Land reclamation, Plant ecology, Agriculture, China—Xinjiang

50-5107

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Topographic surveys, Soil surveys, Soil classification, Desert soils, Steppes, Land development, Regional planning, China—Xinjiang

50-5108

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Topographic surveys, Terrain identification, Soil surveys, Soil mapping, Land development, Regional planning, China—Xinjiang

50-5109

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Terrain identification, Soil surveys, Soil conservation, Land reclamation, Agriculture, Regional planning, Statistical analysis, China—Xinjiang

50-5110

Classification of natural diversiform-leaved poplar (*Populus diversifolia*) stands in the middle and upper reaches of the Tarim River—the poplar tree farm in Xayar County as an example. [Talimuhe zhong-shangyou tianran huyang linlidi leixing—yi Shayaxian huyang linchang wei li]

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Soil surveys, Soil classification, Forest soils, Forestry, Forest land, Revegetation, Trees (plants), Regional planning, China—Xinjiang

50-5111

Study on using computers for MSS image analysis in land use classification—land use in Fukang County, Xinjiang, as an example. [Liyong jisuanji dui MSS tuxiang fenxi jinxing tudi liyong fenlei de yanjiu—yi Xinjiang Fukangxian tudi liyong wei li]

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Soil surveys, Soil classification, Terrain identification, Land development, Regional planning, Spaceborne photography, Computer applications, Image processing, China—Xinjiang

50-5112

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Soil surveys, Soil classification, Mountain soils, Desert soils, Saline soils, Steppes, China—Xinjiang

50-5113

Argid of Xinjiang—a calciorthid soil. [Xinjiang de nianhua ganhantu—mogaitu]

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Desert soils, Saline soils, Soil classification, Soil formation, Soil chemistry, Soil composition, China—Xinjiang

50-5114

Mountain meadow soils of the western Kunlun Mountains. [Xi Kunlunshan gaoshan caodiantu]

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Mountain soils, Meadow soils, Soil surveys, Soil classification, Soil formation, Soil composition, Soil chemistry, China—Kunlun Mountains

50-5115

Mountain meadow soils of Xizang. [Xizang gaoshan caoyuantu]

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Mountain soils, Meadow soils, Soil surveys, Soil classification, Soil formation, Soil composition, Soil chemistry, China—Xizang

50-5116

Characteristics and formation of magnesian alkaline soils. [Meizhi jianhua turang de texing yu xingcheng]

Tian, C.Y., Zhang, B.Q., Li, Y.Z., Xinjiang turang ji tudi ziyuan yanjiu (Studies on the soils and land resources of Xinjiang), Beijing, Kexue chubanshe (Science Press), 1991, p.80-87, In Chinese. 9 refs.

Saline soils, Soil classification, Soil composition, Soil chemistry, Soil formation, China—Xinjiang

50-5117

Using integrated numerical analytical microcomputer software in alkaline soil analysis. [Zonghe shuzhi fenxifa weiji ruanjian zai jiantu fenji zhong de yingyong]

Yao, G.R., Wang, Z.Q., Xinjiang turang ji tudi ziyuan yanjiu (Studies on the soils and land resources of Xinjiang), Beijing, Kexue chubanshe (Science Press), 1991, p.88-93, In Chinese. 3 refs.

Desert soils, Saline soils, Soil chemistry, Soil composition, Soil analysis, Soil classification, Computer programs, China—Xinjiang

50-5118

Distribution of medium- and low-yield land types and their control and countermeasures in Xinjiang. [Xinjiang zhong- dichantian de leixing fenbu yu zhili duice]

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Desert soils, Saline soils, Soil surveys, Soil classification, Soil conservation, Land development, Land reclamation, Agriculture, Regional planning, China—Xinjiang

50-5119

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Wang, G.F., Luo, T.B., Xinjiang turang ji tudi ziyuan yanjiu (Studies on the soils and land resources of Xinjiang), Beijing, Kexue chubanshe (Science Press), 1991, p.103-107, In Chinese.

Desert soils, Saline soils, Land development, Land reclamation, Agriculture, Regional planning, China—Xinjiang

50-5120

Soils of the agricultural areas of Bayingolin Mongol Autonomous Prefecture in Xinjiang. [Xinjiang Bazhou nongqu turang ji qi gailiang liyong]

Li, S.H., Xinjiang turang ji tudi ziyuan yanjiu (Studies on the soils and land resources of Xinjiang), Beijing, Kexue chubanshe (Science Press), 1991, p.108-115, In Chinese. 2 refs.

Soil surveys, Soil conservation, Land development, Land reclamation, Agriculture, Regional planning, China—Xinjiang

50-5121

Analysis of the water and salt balance of the irrigated areas in the Yanqi Basin. [Yanqi pendi guanqu shuiyan pingheng fenxi]

Song, Y.D., Zhang, B.Q., Du, G.P., Li, H.P., Xinjiang turang ji tudi ziyuan yanjiu (Studies on the soils and land resources of Xinjiang), Beijing, Kexue chubanshe (Science Press), 1991, p.116-121, In Chinese.

Saline soils, Soil pollution, Soil chemistry, Soil conservation, Land reclamation, Ground water, Water balance, Salinity, Irrigation, China—Xinjiang

50-5122

Study on alfalfa seedling cultivation technology in saline hardpan soil. [Yanjian banjiedi muxu baomiao jishu yanjiu]

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Saline soils, Soil conservation, Soil chemistry, Soil composition, Land reclamation, Agriculture, Plant ecology, China—Xinjiang

50-5123

Relationship between soil environmental conditions and Jiashi muskmelon quality and productivity. [Turang huanjing tiaojian yu Jiashi gua pinzhi chanliang guanxi]

Li, P.Q., Zhao, G.H., Yue, H.X., Chang, Q., Xinjiang turang ji tudi ziyuan yanjiu (Studies on the soils and land resources of Xinjiang), Beijing, Kexue chubanshe (Science Press), 1991, p.128-135, In Chinese.

Lacustrine deposits, Saline soils, Soil composition, Soil chemistry, Soil conservation, Land development, Land reclamation, Agriculture, Plant ecology, China—Xinjiang

50-5124

Effect of fertilizer on the quality and productivity of Jiashi melons. [Shifei dui Jiashi gua pinzhi chanliang de yingxiang]

Zhao, G.H., Li, P.Q., Chang, Q., Yue, H.X., Xinjiang turang ji tudi ziyuan yanjiu (Studies on the soils and land resources of Xinjiang), Beijing, Kexue chubanshe (Science Press), 1991, p.136-142, In Chinese.

Saline soils, Soil composition, Soil chemistry, Soil conservation, Land development, Land reclamation, Agriculture, Plant ecology, China—Xinjiang

50-5125

Effect of irrigation on the quality and productivity of Jiashi melons. [Guanshui dui Jiashi gua pinzhi chanliang de yingxiang]

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Saline soils, Soil composition, Soil chemistry, Soil conservation, Land development, Land reclamation, Irrigation, Agriculture, Plant ecology, China—Xinjiang

50-5126

Effect of different fertilizer treatments on the enzyme activity of Jiashi melon field soils. [Butong shifei chuli dui Jiashi guadi turang meihuoxing de yingxiang]

Yue, H.X., Li, P.Q., Zhao, G.H., Chang, Q., Xinjiang turang ji tudi ziyuan yanjiu (Studies on the soils and land resources of Xinjiang), Beijing, Kexue chubanshe (Science Press), 1991, p.147-151, In Chinese. 3 refs.

Saline soils, Soil composition, Soil chemistry, Soil microbiology, Soil conservation, Land development, Land reclamation, Agriculture, Plant ecology, China—Xinjiang

50-5127

Study on the causes and control of bitter pit in apples. [Pingguo kudoubing fabing yuanyin ji fangzhi jishu yanjiu]

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Saline soils, Soil composition, Soil chemistry, Physiological effects, Plant physiology, Plant tissues, Plant ecology, Soil conservation, Land development, Land reclamation, China—Xinjiang

50-5128

Improving the rational flow direction, flow rate, and utilization rate of chemical fertilizers in Xinjiang. [Lun Xinjiang huafei de heli liuxiang, liuliang ji liyonglu de tigao]

Huang, Z.W., Duan, G., Ni, J., Xinjiang turang ji tudi ziyuan yanjiu (Studies on the soils and land resources of Xinjiang), Beijing, Kexue chubanshe (Science Press), 1991, p.158-164, In Chinese. 8 refs.

Soil composition, Soil chemistry, Soil conservation, Land development, Land reclamation, Plant physiology, Plant ecology, Nutrient cycle, Agriculture, China—Xinjiang

50-5129

Study on a high-efficiency new type of urea fertilizer using ^{15}N. [^{15}N de yingyong yu gaoxiao xinxing niaosu feiliao de yanjiu]

Xiong, J.M., Huang, Z.W., Wu, G.H., Ji, Y., Xinjiang turang ji tudi ziyuan yanjiu (Studies on the soils and land resources of Xinjiang), Beijing, Kexue chubanshe (Science Press), 1991, p.165-171, In Chinese. 4 refs.

Soil chemistry, Soil composition, Soil conservation, Land development, Land reclamation, Plant physiology, Plant ecology, Nutrient cycle, Agriculture, China—Xinjiang

50-5130

Determination and evaluation of the *A* value and *L* value of phosphorus in seven soils and five crops of Xinjiang. [Xinjiang qizhong tulei wuzhong zuowu zhong lin de *A* zhi he *L* zhi de ceding ji qi pingjia]

Wu, G.H., Huang, Z.W., Xiong, J.M., Xinjiang turang ji tudi ziyuan yanjiu (Studies on the soils and land resources of Xinjiang), Beijing, Kexue chubanshe (Science Press), 1991, p.172-183, In Chinese. 7 refs.

Soil chemistry, Soil composition, Soil analysis, Plant physiology, Plant tissues, Plant ecology, Nutrient cycle, Isotope analysis, China—Xinjiang

50-5131

Selenium in the saline podsol and desert soils of the northern foothills of Tian Shan. [Tianshan bei lu jianhua hui motu zhong de xi]

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Desert soils, Saline soils, Podsol, Mountain soils, Soil composition, Soil chemistry, Soil analysis, Geochemistry, Plant ecology, China—Xinjiang

50-5132

Study on the dynamics of chemical elements in desert saline soil-plant systems. [Huangmo jianhua turang-zhiwu xitong zhong yuansu dongtai tantao]

Wang, Z.Q., Li, S.G., Xinjiang turang ji tudi ziyuan yanjiu (Studies on the soils and land resources of Xinjiang), Beijing, Kexue chubanshe (Science Press), 1991, p.191-196, In Chinese.

Desert soils, Saline soils, Soil composition, Soil chemistry, Geochemistry, Nutrient cycle, Plant ecology, Plant physiology, China—Xinjiang

50-5133

Study on the critical content of heavy metals in the podsol desert soils of the Fukang region. [Fukang diqu hui motu zhongjinshu linjie hanliang tantao]

Xie, Y.Y., Tian, X.F., Lan, Z.D., Xinjiang turang ji tudi ziyuan yanjiu (Studies on the soils and land resources of Xinjiang), Beijing, Kexue chubanshe (Science Press), 1991, p.197-202, In Chinese.

Desert soils, Podsol, Soil composition, Soil chemistry, Geochemistry, Nutrient cycle, Plant ecology, Plant physiology, China—Xinjiang

50-5134

Study on the distribution of soluble salts and heavy hydrogen in Bosten Lake and its water cycle and metabolism. [Bositeng hu kerong yan he zhong qing fenbu ji qi shui xunhuan daixie yanjiu]

Huang, Z.W., Song, Y.D., Yang, M.Q., Zhang, J.S., Xinjiang turang ji tudi ziyuan yanjiu (Studies on the soils and land resources of Xinjiang), Beijing, Kexue chubanshe (Science Press), 1991, p.203-211, In Chinese. 4 refs.

Salt lakes, Lake water, Water chemistry, Limnology, Hydrogeochemistry, Hydrologic cycle, Hydrogen, Isotope analysis, China—Xinjiang

50-5135

X ray fluorescence spectrum analysis of the total mineral content of soils. [Turang kuangzhi quanliang fenxi de X yingguang guangpufa]

Chen, T.M., Mou, S.Y., Xinjiang turang ji tudi ziyuan yanjiu (Studies on the soils and land resources of Xinjiang), Beijing, Kexue chubanshe (Science Press), 1991, 212-215, In Chinese. 5 refs.

Soil composition, Soil chemistry, Soil analysis, Geochemistry, Mineralogy, X ray analysis

50-5136

Study on improving the pretreatment in mechanical analysis of soils by suction tube. [Xiguanfa turang jixie fenxi qian chuli gaijin yanjiu]

Liao, B.L., Du, L., Zhang, H., Xinjiang turang ji tudi ziyuan yanjiu (Studies on the soils and land resources of Xinjiang), Beijing, Kexue chubanshe (Science Press), 1991, p.216-221, In Chinese. 3 refs.

Soil composition, Soil chemistry, Soil analysis

50-5137

Operational method to determine the optical density of humic acid in soils. [Turang fuzhisuan guangmidu ceding de caozuo fangfa]

Zhang, C.Y., Kuang, X.F., Xinjiang turang ji tudi ziyuan yanjiu (Studies on the soils and land resources of Xinjiang), Beijing, Kexue chubanshe (Science Press), 1991, p.222-225, In Chinese. 2 refs.

Organic soils, Soil composition, Soil chemistry, Soil analysis

50-5138

Recent morphogenesis and problems in the geoecology of the Russian Arctic. [Sovremennyĭ morfogenez i problemy geoekologii Rossiĭskoĭ Arktiki]

Sen'kin, O.V., Fedorov, B.G., Musatov, E.E., St. Petersburg, St. Petersburg University, 1995, 167p., In Russian. 112 refs.

Geomorphology, Geocryology, Models, Topographic features, Rivers, Deltas, Russia, Russia—Ob' River

50-5139

II International Conference on Permafrost (USSR, Yakutsk, 16-28 July 1973): abstracts of papers. [II Mezhdunarodnaia konferentsiia po merzlotovedeniiu (SSSR, IAkutsk, 16-28 iiulia 1973 g.): tezisy dokladov]

International Conference on Permafrost, 2nd, Yakutsk, July 16-28, 1973, Mel'nikov, P.I., ed, Moscow, Nauka, 1973, 320p., Abstracts of 256 papers. In Russian and English. For complete papers and discussions, see 28-1013 through 28-1198 and 30-1508 through 30-1519.

Permafrost, Permafrost hydrology, Permafrost origin, Permafrost thermal properties, Permafrost beneath structures, Ground ice, Frost heave, Frozen ground mechanics, Frozen ground chemistry, Soil water migration, Permafrost bases, Active layer, Frozen fines, Cold weather construction, Russia, Canada, United States—Alaska

50-5140

Lessons from failures in metal-structure buildings and structures in the North; a manual. [Uroki avariĭ metallokonstruktsiĭ zdaniĭ i sooruzheniĭ na Severe; uchebnoe posobie]

Kornilov, T.A., Govorov, K.I., Toptun, V.E., Yakutsk, Yakutsk. gosud. univ., 1995, 51p., In Russian. 8 refs.

Cold weather construction, Cold weather performance, Damage, Steels, Buildings, Design, Design criteria, Manuals, Russia—Far North

50-5141

Piles and pile foundations under conditions of Siberia. [Svai i svaĭnye fundamenty v usloviiakh Sibiri]

Solov'ev, IU.I., ed, Novosibirsk, Sibirskaia gosudarstvennaia akademiia puteĭ soobshcheniia, 1994, 125p., In Russian. 77 refs.

Pile structures, Foundations, Piles, Pile load tests, Cold weather construction, Frost heave, Frozen ground mechanics, Permafrost bases, Bearing strength, Russia—Siberia

50-5142

Avalanche prevention and soil control in the Mount Krížná area. [Protilavínové a pôdoochranné opatrenia v oblasti Krížnej]

Midriak, R., *Lesnícky časopis*, June 1976, 22(2), p.111-127, In Czech with Russian, English and German summaries.

Avalanche protection, Avalanche mechanics, Countermeasures, Snow fences, Slope stability, Soil erosion, Slovakia—Carpathian Mountains

50-5143

Techniques and procedures for route clearance.

Schneck, W.C., Jr., Green, B.M., *Engineer*, Mar. 1996, Vol.26, p.3-10, 15 refs.

Mines (ordnance), Detection, Countermeasures, Military operation, Seasonal freeze thaw, Bosnia-Herzegovina

50-5144

Engineers in Bosnia: an overview.

Treleaven, D.L., *Engineer*, Mar. 1996, Vol.26, p.18-22, 29.

Mines (ordnance), Detection, Countermeasures, Military operation, Military engineering, Snow removal equipment, Forecasting, Seasonal freeze thaw, Frozen ground mechanics, Bosnia-Herzegovina

50-5145

Environment and ecosystems of Novaya Zemlya; the archipelago and shelf. [Sreda obitaniia i ekosistemy Novoĭ Zemli; Arkhipelag i shel'f]

Matishov, G.G., ed, Apatity, RAN, Kola Science Centre, Murmansk Marine Biological Institute, 1995, 201p., In Russian with English title page and table of contents. Refs. p.182-201.

Plankton, Marine biology, Ecosystems, Chlorophylls, Biomass, Icebergs, Water chemistry, Sea ice, Radioactive isotopes, Russia—Novaya Zemlya, Barents Sea, Russia—Kara Sea

50-5146

Incorporating airborne data into the spatial model used to estimate snow water equivalent.

Carroll, S.S., Day, G.N., Carroll, T.R., *American Water Resources Association. Proceedings*, Mar. 1993, p.259-264, 7 refs.

Precipitation (meteorology), Snow hydrology, Watersheds, Snow water equivalent, Aerial surveys, Radiance, Gamma irradiation, Attenuation, Water supply, Forecasting, Simulation, Mathematical models

50-5147

Newsletter, No.1, May 1995.

International Permafrost Association, 1995, 11p.

Organizations, Meetings, Permafrost, Research projects, International cooperation

50-5148

Newsletter, No.2, Dec. 1986.

International Permafrost Association, 1986, 12p.

Meetings, Organizations, Research projects, International cooperation, Permafrost

50-5149

Newsletter, No.3, Dec. 1987.

International Permafrost Association, 1987, 15p.

Meetings, Organizations, International cooperation, Research projects, Permafrost

50-5150

Newsletter, No.4, Jan. 1988.

International Permafrost Association, 1988, 10p.

Meetings, Organizations, International cooperation, Research projects, Permafrost

50-5151

Newsletter, No.5, Apr. 1989.

International Permafrost Association, 1989, 9p.

Meetings, International cooperation, Organizations, Research projects, Permafrost

50-5152

Deep water distillation.

Boyle, E., *Nature*, Feb. 22, 1996, 37(6567), p.679-680, 14 refs.

Sea water, Ocean currents, Water chemistry, Isotopes, North Atlantic Ocean, —South Atlantic Ocean

By effectively distilling a particular pair of isotopes deep under the Atlantic, ocean circulation has recorded its own strength thousands of years into the past. This is the basic premise reported in the article by Yu et al. in this same issue of Nature. Among the consequences of the circulation of the North Atlantic Deep Water is the service it provides as a source of heat and salt for the antarctic southern ocean. Other main points of the Yu paper are noted by Boyle in this preview commentary.

50-5153

Similar rates of modern and last-glacial ocean thermohaline circulation inferred from radiochemical data.

Yu, E.F., Francois, R., Bacon, M.P., *Nature*, Feb. 22, 1996, 379(6567), p.689-694, 53 refs.

Ocean currents, Sea water, Water chemistry, Isotopes, Sediments, North Atlantic Ocean, —South Atlantic Ocean

Today, the ocean thermohaline circulation transports half of the ^{231}Pa produced by radioactive decay in the Atlantic Ocean water column to the southern ocean. This export respectively imparts low and high $^{231}Pa/^{230}Th$ ratios to the surface sediments of these oceans. Ocean sediments from the Last Glacial Maximum bear a similar isotopic fingerprint, implying that advection of North Atlantic Deep/Intermediate Water into the Circumpolar Deep Water of the southern ocean occurred at a similar—or slightly higher—rate during the last glacial period. (Auth.)

50-5154
Martin's sense of ice.
Stevens, J.E., *Sciences*, July-Aug. 1995, 35(4), p.14-17.
Research projects, Oceanography, Sea ice distribution, Ice surveys, Marine biology
Probing the pack ice that rings Antarctica, Martin Jeffries, a glaciologist from the Geophysical Institute at the University of Alaska in Fairbanks, finds a mesmerizing dynamism and abundant evidence of life. (Auth. mod.)

50-5155
Ny Friesland Orogen, Spitsbergen.
Harland, W.B., Scott, R.A., Auckland, K.A., Snape, I., *Geological magazine*, 1992, 129(6), p.679-708, Refs. p.703-708.
Marine geology, Geological surveys, Tectonics, Earth crust, Geologic processes, Stratigraphy, Geochronology, Norway—Spitsbergen

50-5156
Methanogenesis at low temperatures by microflora of tundra wetland soil.
Kotsiurbenko, O.R., Nozhevnikova, A.N., Solov'eva, T.I., Zavarzin, G.A., *Antonie van Leeuwenhoek*, Jan. 1996, 69(1), p.75-86, 37 refs.
Tundra soils, Soil tests, Geochemistry, Wetlands, Soil microbiology, Biomass, Decomposition, Hydrocarbons, Natural gas, Low temperature tests, Greenhouse effect, Vapor transfer

50-5157
Dynamics of the Antarctic Circumpolar Current.
Ivchenko, V.O., Richards, K.J., Stevens. D.P., *Journal of physical oceanography*, May 1996, 26(5), p.753-774, 37 refs.
Oceanography, Marine atmospheres, Ocean currents, Wind factors, Flow measurement, Shear flow, Bottom topography, Topographic effects, Atmospheric pressure, Mathematical models
The dynamics of the Antarctic Circumpolar Current (ACC) in a near-eddy-resolving model of the southern ocean (FRAM) are investigated. A streamwise coordinate system is used, rather than a more conventional approach of considering zonally averaged quantities. The motivation for this approach is the large deviation from a purely zonal flow made by the current. The total effect of transient eddies is to produce a drag on the mean flow, in contrast to the zonally averaged case. The vertical penetration of stress is considered. A generalized formula is derived for the interfacial form stress averaged along a convoluted path and that includes nonquasigeostrophic effects. The interfacial form stress is found to be related not only to the local wind stress but also to changes in stratification and the Coriolis parameter along the path of integration. Using the model data, the nonquasigeostrophic effects are found to be important, particularly toward the northern flank of the ACC. By relating the vertical shear of the flow to the interfacial form stress, it is shown that the vertical structure of the flow is set by a combination of wind stress and meridional overturning. There is, therefore, an intimate linking of the wind and thermohaline-driven circulations. (Auth. mod.)

50-5158
Fracture toughness of freshwater ice—part 1: experimental technique and results.
Weber, L.J., Nixon, W.A., *Journal of offshore mechanics and arctic engineering*, May 1996, 118(2), p.135-140, 19 refs.
Ice mechanics, Ice strength, Brittleness, Loading, Cracking (fracturing), Tensile properties, Compressive properties, Ice elasticity, Mechanical tests, Laboratory techniques, Temperature effects

50-5159
Fracture toughness of freshwater ice—part II: analysis and micrography.
Weber, L.J., Nixon, W.A., *Journal of offshore mechanics and arctic engineering*, May 1996, 118(2), p.141-147, 15 refs.
Ice mechanics, Ice strength, Brittleness, Crack propagation, Fracture zones, Ice plasticity, Mechanical tests, Loading, Ice microstructure, Temperature effects

50-5160
Computer model of glaze accretion on wires.
Draganoiu, G., Lamarche, L., McComber, P., *Journal of offshore mechanics and arctic engineering*, May 1996, 118(2), p.148-157, 32 refs. For another version see 47-4235.
Transmission lines, Power line icing, Ice accretion, Heat transfer coefficient, Ice solid interface, Ice air interface, Viscous flow, Topographic effects, Glaze, Computerized simulation, Heat transfer coefficient

50-5161
Influence of the surface liquid film on cylinder icing under marine conditions.
Lozowski, E.P., Kobos, A.M., Kachurin, L.G., *Journal of offshore mechanics and arctic engineering*, May 1996, 118(2), p.158-164, 18 refs. For another version see 50-2954.
Marine atmospheres, Offshore structures, Icing, Mass transfer, Ice solid interface, Ice water interface, Water films, Supercooling, Mathematical models, Heat transfer coefficient

50-5162
Cirrus infrared parameters and shortwave reflectance relations from observations.
Spinhirne, J.D., Hart, W.D., Hlavka, D.L., *Journal of the atmospheric sciences*, May 15, 1995, 53(10), p.1438-1458, 32 refs.
Climatology, Radiometry, Lidar, Cloud physics, Radiance, Optical properties, Infrared radiation, Ice crystal optics, Reflectivity, Aerial surveys

50-5163
Precipitation identification from radar wind profiler spectral moment data: vertical velocity histograms, velocity variance, and signal power-vertical velocity correlations.
Ralph, F.M., Neiman, P.J., Ruffieux, D., *Journal of atmospheric and oceanic technology*, June 1996, 13(3), p.545-559, 28 refs.
Climatology, Precipitation (meteorology), Classifications, Radar echoes, Wind velocity, Profiles, Backscattering, Spectra, Ice detection, Falling snow, Snow optics, Correlation

50-5164
Detection of weakly precipitating winter clouds by a NOAA 404-MHz wind profiler.
Orr, B.W., Martner, B.E., *Journal of atmospheric and oceanic technology*, June 1996, 13(3), p.570-580, 20 refs.
Climatology, Precipitation (meteorology), Cloud physics, Radar echoes, Cloud dissipation, Profiles, Reflectivity, Ice crystal optics, Ice detection

50-5165
Precipitation hydrometeor characterization by a CW Doppler radar.
Duvernoy, J., Gaumet, J.L., *Journal of atmospheric and oceanic technology*, June 1996, 13(3), p.620-629, 29 refs.
Precipitation (meteorology), Classifications, Meteorological instruments, Weather observations, Radar echoes, Ice detection, Falling snow, Design, Performance

50-5166
Polarimetric radar at attenuated wavelengths as a hydrological sensor.
Sauvageot, H., *Journal of atmospheric and oceanic technology*, June 1996, 13(3), p.630-637, 36 refs.
Precipitation (meteorology), Classifications, Radar echoes, Sensors, Hail clouds, Ice detection, Reflectivity, Polarization (waves), Attenuation

50-5167
Case study in three-dimensional inverse methods: combining hydrographic, acoustic, and moored thermistor data in the Greenland Sea.
Morawitz, W.M.L., Cornuelle, B.D., Worcester, P.F., *Journal of atmospheric and oceanic technology*, June 1996, 13(3), p.659-679, 30 refs.
Oceanography, Water temperature, Temperature gradients, Profiles, Temperature measurement, Thermistors, Hydrography, Convection, Underwater acoustics, Ice cover effect, Seasonal variations, Greenland Sea

50-5168
Post-glacial mass flow and associated deposits preserved in palaeovalleys: the Late Precambrian Morænsø Formation, North Greenland.
Collinson, J.D., Bevins, R.E., Clemmensen, L.B., *Meddelelser om Grønland. Geoscience*, 1989, No.21, 26p., 42 refs.
DLC QE70.M43
Glaciation, Glacial geology, Glacial erosion, Glacial deposits, Mass movements (geology), Marine geology, Marine deposits, Alluvium, Stratigraphy, Geochronology, Paleoclimatology, Greenland

50-5169
Late Quaternary stratigraphy and glaciology in the Thule area, Northwest Greenland.
Funder, S., ed, *Meddelelser om Grønland. Geoscience*, 1990, No.22, 63p., Refs. p.60-63.
DLC QE70.M43
Geological surveys, Glaciation, Glacial geology, Glacial deposits, Fossil ice, Ice dating, Isotope analysis, Marine geology, Marine deposits, Quaternary deposits, Fossils, Geochronology, Stratigraphy, Paleoclimatology, Greenland

50-5170
Kap København Formation: stratigraphy and palaeobotany of a Plio-Pleistocene sequence in Peary Land, North Greenland.
Bennike, O., *Meddelelser om Grønland. Geoscience*, 1990, No.23, 85p., Refs. p.77-83.
DLC QE70.M43
Geological surveys, Paleobotany, Forest tundra, Tundra vegetation, Vegetation patterns, Fossils, Marine deposits, Stratigraphy, Geochronology, Paleoclimatology, Greenland

50-5171
Foraminiferal stratigraphy in the Plio-Pleistocene Kap København Formation, North Greenland.
Feyling-Hanssen, R.W., *Meddelelser om Grønland. Geoscience*, 1990, No.24, 32p., Refs. p.30-32.
DLC QE70.M43
Geological surveys, Marine geology, Marine deposits, Paleoecology, Fossils, Stratigraphy, Geochronology, Paleoclimatology, Greenland

50-5172
Modern periglacial eolian deposits and landforms in the Søndre Strømfjord area, West Greenland and their palaeoenvironmental implications.
Dijkmans, J.W.A., Törnqvist, T.E., *Meddelelser om Grønland. Geoscience*, 1991, No.25, 39p., 65 refs.
DLC QE70.M43
Periglacial processes, Glacial erosion, Outwash, Floodplains, Alluvium, Wind erosion, Eolian soils, Loess, Nivation, Sediment transport, Vegetation factors, Soil formation, Soil dating, Paleoclimatology, Greenland

50-5173
Seafloor-tethered sub-ice vertical acoustic array.
Stevenson, J.M., Sotirin, B.J., McDonald, V.K., Olson, J.R., Newton, J.L., Oceans '94 Conference, Brest, France, Sep. 13-16, 1994. Proceedings. Vol.1, New York, Institute of Electrical and Electronics Engineers, 1994, p.I/620-I/622.
DLC TC1505.O33198 1994 Vol.1
Oceanographic surveys, Ocean currents, Underwater acoustics, Acoustic measurement, Subglacial observations, Ice cover effect

50-5174
Integrated array element localization system.
Sotirin, B.J., McDonald, V.K., Olson, J.R., Stevenson, J.M., Pickens, G.O., Oceans '94 Conference, Brest, France, Sep. 13-16, 1994. Proceedings. Vol.1, New York, Institute of Electrical and Electronics Engineers, 1994, p.I/727-I/731, 1 ref.
DLC TC1505.O33198 1994 Vol.1
Oceanographic surveys, Underwater acoustics, Acoustic measurement, Ice acoustics, Ice cover effect, Subglacial observations

50-5175

Automated approach to the sea-ice motion estimation.

Moctezuma Flores, M., Maitre, H., Parmiggiani, F., Oceans '94 Conference, Brest, France, Sep. 13-16, 1994. Proceedings. Vol.1, New York, Institute of Electrical and Electronics Engineers, 1994, p.I/819-I/822, With French summary. 9 refs.

DLC TC1505.O33198 1994 Vol.1

Ice surveys, Ice detection, Ice forecasting, Drift, Spaceborne photography, Image processing, Computerized simulation

50-5176

United States Navy operational oceanographic nowcast/forecast system.

Durham, D.L., Oceans '94 Conference, Brest, France, Sep. 13-16, 1994. Proceedings. Vol.3, New York, Institute of Electrical and Electronics Engineers, 1994, p.III/45-III/49, 19 refs.

DLC TC1505.O33198 1994 Vol.3

Marine meteorology, Weather forecasting, Ice forecasting, Sea ice, Ice reporting, Military operation, Computerized simulation

50-5177

Structural failure of the *Titanic*.

Garzke, W.H., Jr., Brown, D.K., Sandiford, A.D., Oceans '94 Conference, Brest, France, Sep. 13-16, 1994. Proceedings. Vol.3, New York, Institute of Electrical and Electronics Engineers, 1994, p.III/138-III/148, 25 refs.

DLC TC1505.O33198 1994 Vol.3

Icebergs, Ice solid interface, Ice loads, Ships, Accidents, Steels, Structural analysis, Brittleness, Impact strength, Flexural strength

50-5178

Coupling and propagation of elastic waves in arctic pack ice.

Jarvis, S.M., Santos, G.M., Stein, P.J., Euerle, S.E., Oceans '94 Conference, Brest, France, Sep. 13-16, 1994. Proceedings. Vol.3, New York, Institute of Electrical and Electronics Engineers, 1994, p.III/600-III/605, 12 refs.

DLC TC1505.O33198 1994 Vol.3

Pack ice, Ice acoustics, Ice elasticity, Icequakes, Ice water interface, Ice cover effect, Subglacial observations, Underwater acoustics, Elastic waves, Wave propagation

50-5179

Heat flux from leads in pack ice from a Landsat TM image.

Lindsay, R.W., Oceans '94 Conference, Brest, France, Sep. 13-16, 1994. Proceedings. Vol.3, New York, Institute of Electrical and Electronics Engineers, 1994, p.III/606-III/611, 11 refs.

DLC TC1505.O33198 1994 Vol.3

Ice surveys, Sea ice distribution, Pack ice, Ice openings, Ice formation, Ice heat flux, Air ice water interaction, Surface temperature, Albedo, Radiometry, Spaceborne photography, Image processing

50-5180

Measuring ocean parameters at extremes of temperature.

Neal, G.W., Oldfield, S., Oceans '94 Conference, Brest, France, Sep. 13-16, 1994. Proceedings. Vol.3, New York, Institute of Electrical and Electronics Engineers, 1994, p.III/612-III/616.

DLC TC1505.O33198 1994 Vol.3

Oceanographic surveys, Sea water, Water temperature, Water chemistry, Subglacial observations, Subglacial navigation, Low temperature tests

50-5181

SARA, an autonomous underwater vehicle for researches in Antarctica.

Papalia, B., Prendin, W., Veruggio, G., Oceans '94 Conference, Brest, France, Sep. 13-16, 1994. Proceedings. Vol.3, New York, Institute of Electrical and Electronics Engineers, 1994, p.III/617-III/620.

DLC TC1505.O33198 1994 Vol.3

Oceanographic surveys, Ice water interface, Ice bottom surface, Subglacial observations, Subglacial navigation, Submarines, Research projects

Within the Italian Program for Researches in Antarctica, a project aimed at developing an autonomous underwater robot has been launched. SARA (Sottomarino Autonomo Robotizzato Antarctico) will perform a number of missions in support of oceanography, glaciology, and biology, and will constitute a platform for different applications, such as environmental survey and underwater plant observation.

50-5182

ROBY goes to Antarctica.

Bono, R., Bruzzone, G., Caccia, M., Grassia, F., Spirandelli, E., Veruggio, G., Oceans '94 Conference, Brest, France, Sep. 13-16, 1994. Proceedings. Vol.3, New York, Institute of Electrical and Electronics Engineers, 1994, p.III/621-III/625, 6 refs.

DLC TC1505.O33198 1994 Vol.3

Oceanographic surveys, Ice water interface, Subglacial observations, Subglacial navigation, Submarines, Research projects

The IX Italian Expedition 1993-94 of PNRA (Programma Nazionale di Richerche in Antartide) included the first experimental campaign in Antarctica in the field of underwater robotics. It can be described as a pilot mission to better define the role of this technology in future antarctic exploration. The work plan was as follows: to test and develop the CPR-IAN test-bed underwater prototype called ROBY; to verify requirements and constraints of the SARA (Sottomarino Autonomo Robotizzato Antarctica), an advanced antarctic AUV currently being designed by a consortium including CNR, ENEA, Tecnomare and others; and to help scientists collect oceanographic data. The results were satisfactory both from the technical and scientific points of view. ROBY worked well in all renditions and no electrical or mechanical problems arose from either the low temperatures or rough treatment involved in such harsh working conditions. Eighteen dives were performed at a maximum depth of 150 m for a total underwater working time of 20 hours. Most of the marine environments of Terra Nova Bay were explored and documented. (Auth. mod.)

50-5183

Autonomous station for meteo-oceanographic data acquisition in Antarctica: prototype development and results from the first operative phase.

Gasparoni, F., Busetto, G., Cucinotta, A., Oceans '94 Conference, Brest, France, Sep. 13-16, 1994. Proceedings. Vol.3, New York, Institute of Electrical and Electronics Engineers, 1994, p.III/626-III/630, 5 refs.

DLC TC1505.O33198 1994 Vol.3

Oceanographic surveys, Marine meteorology, Polynyas, Weather stations, Data transmission, Antarctica—Terra Nova Bay

In the early 90s the Italian National Antarctic Research Program promoted a study aimed at the definition of an advanced automatic station able to operate with one year autonomy in antarctic waters, allowing continuous collection of meteo-oceanographic data. The main results of the study were the demonstration of the feasibility of a concept based on a moored ice-resistent buoy able to allocate various instrumented modules, the definition of mission requirement and relevant sensing and electronic equipment, and the identification of the most significant installation sites. In order to verify the concept in real operative conditions, a prototype of the station was developed and installed in Antarctica during the 1993-94 Italian Expedition. The site chosen is in Terra Nova Bay approximately 30 km south of the Italian Base, in about 350 m water depth, and is characterized by the presence of a polynya. Once this first operative phase is completed, the station capabilities will be extended with the adoption of meteo-oceanographic sensors and other scientific packages. In the paper a description of the prototype station is given, and the results of the experimentation and data acquisition are presented and discussed. (Auth.)

50-5184

Three dimensional anisotropic constitutive model for ductile behaviour of columnar grained sea ice.

Zhan, C., Sinha, N.K., Evgin, E., *Acta materialia,* May 1996, 44(5), p.1839-1847, 29 refs.

Ice mechanics, Ice models, Sea ice, Ice microstructure, Anisotropy, Ice water interface, Brines, Porosity, Ice elasticity, Tensile properties, Strain tests, Mathematical models

50-5185

Sea ice rheology and sea ice modelling.

Tremblay, B., McGill University. Centre for Climate and Global Change Research. Report No.93-12, Montreal, July 1993, 62p., Refs. p. 58-62.

Oceanography, Sea ice distribution, Drift, Ice mechanics, Pack ice, Shear strength, Ice deformation, Ice models, Rheology, Mathematical models

50-5186

Simulation of the seasonal arctic sea-ice cover with a dynamic thermodynamic sea-ice model.

Holland, D.M., Mysak, L.A., Oberhuber, J.M., McGill University. Centre for Climate and Global Change Research. Report No.91-17, Montreal, Oct. 1991, 68p., 23 refs.

Oceanography, Sea ice distribution, Drift, Ice models, Ice cover thickness, Seasonal variations, Ocean currents, Air ice water interaction, Thermodynamics, Rheology, Simulation, Mathematical models, Arctic Ocean

50-5187

Implications for deglaciation chronology from new AMS age determinations in central West Greenland.

Van Tatenhove, F.G.M., Van der Meer, J.J.M., *Quaternary research,* May 1996, 45(3), p.245-253, 26 refs.

Glacial geology, Paleoclimatology, Glacier oscillation, Ice edge, Geochronology, Quaternary deposits, Moraines, Radioactive age determination, Greenland

50-5188

Age of Sheep Creek tephra (Pleistocene) in central Alaska from thermoluminescence dating of bracketing loess.

Berger, G.W., Péwé, T.L., Westgate, J.A., Preece, S.J., *Quaternary research,* May 1996, 45(3), p.263-270, 40 refs.

Pleistocene, Glaciation, Quaternary deposits, Volcanic ash, Loess, Stratigraphy, Luminescence, Geochronology, Radioactive age determination, Correlation, United States—Alaska—Sheep Creek

50-5189

Warming at 18,000 yr B.P. in the tropical Andes.

Helmens, K.F., Kuhry, P., Rutter, N.W., Van Der Borg, K., De Jong, A.F.M., *Quaternary research,* May 1996, 45(3), p.289-299, 32 refs.

Pleistocene, Paleoclimatology, Glacier oscillation, Global warming, Moraines, Quaternary deposits, Sediments, Drill core analysis, Palynology, Paleoecology, Radioactive age determination, Geochronology, Colombia—Andes Mountains

50-5190

Radiocarbon geochemistry of modern and ancient arctic lake systems, Baffin Island, Canada.

Abbott, M.B., Stafford, T.W., Jr., *Quaternary research,* May 1996, 45(3), p.300-311, 25 refs.

Geochronology, Watersheds, Sedimentation, Quaternary deposits, Lacustrine deposits, Drill core analysis, Radioactive age determination, Carbon isotopes, Geochemistry, Canada—Northwest Territories—Baffin Island

50-5191

Analysis of spatial reverberation statistics in the central Arctic.

LePage, K., Schmidt, H., *Acoustical Society of America. Journal,* Apr. 1996, 99(4)pt.1, p.2033-2047, 17 refs.

Oceanography, Underwater acoustics, Sound waves, Low frequencies, Wave propagation, Scattering, Spectra, Ice cover effect, Ice bottom surface, Surface roughness, Statistical analysis, Correlation, Arctic Ocean

50-5192

III. Volume thermal radiation and absorption of water—theoretical calculations of water's specific heat capacity dependence on temperature within the interval of 0° to 75°C.

Aĭvazian, G.M., *International journal of infrared and millimeter waves,* Mar. 1996, 17(3), p.625-658, 9 refs.

Water structure, Density (mass/volume), Thermal radiation, Absorption, Heat capacity, Temperature gradients, Indexes (ratios), Thermodynamic properties

50-5193
Formation mechanism of side branches of dendritic ice crystals grown from vapor.
Gonda, T., Nakahara, H., *Journal of crystal growth,* Mar. 1996, 160(1-2), p.162-166, 11 refs.
Ice physics, Dendritic ice, Ice crystal growth, Ice crystal structure, Ice microstructure, Supersaturation, Anisotropy, Electron microscopy

50-5194
Hoods, mists, frosts, and ice caps at the poles of Mars.
Dollfus, A., Ebisawa, S., Crussaire, D., *Journal of geophysical research,* Apr. 25, 1996, 101(E4), p.9207-9225, 47 refs.
Mars (planet), Polar regions, Surface structure, Climatology, Planetary environments, Extraterrestrial ice, Ice sheets, Frost, Ice formation, Seasonal variations, Remote sensing, Imaging, Photometry

50-5195
Detection and monitoring of H_2O and CO_2 ice clouds on Mars.
Bell, J.F., III, Calvin, W.M., Ockert-Bell, M.E., Crisp, D., Pollack, J.B., Spencer, J., *Journal of geophysical research,* Apr. 25, 1996, 101(E4), p.9227-9237, 60 refs.
Mars (planet), Climatology, Atmospheric composition, Cloud cover, Frost, Ice detection, Carbon dioxide, Radiation absorption, Ice optics, Spectroscopy, Imaging, Spectra, Albedo

50-5196
Mass dependence of energy loss in collisions of icy spheres: an experimental study.
Dilley, J., Crawford, D., *Journal of geophysical research.* Apr. 25, 1996, 101(E4), p.9267-9270, 14 refs.
Planetary environments, Atmospheric physics, Dust, Extraterrestrial ice, Spheres, Impact tests, Ice crystal collision, Ice solid interface, Ice elasticity, Viscoelasticity, Mass transfer, Simulation

50-5197
Satellite mapping and monitoring of sea ice.
Smith, D.M., Barrett, E.C., University of Bristol. Department of Geography. Remote Sensing Unit. Final report to the Defence Research Agency, Bristol, UK, Apr. 1994, 127p., Refs. p. 119-123.
Sea ice distribution, Ice surveys, Ice detection, Ice edge, Classifications, Sensor mapping, Spaceborne photography, Radiometry, Synthetic aperture radar, Image processing, Filters, Data processing

50-5198
Geological framework of a transect of the central Brooks Range: regional relations and an alternative to Endicott Mountains allochthon.
Kelley, J.S., Brosgé, W.P., *AAPG bulletin,* Aug. 1995, 79(8), p.1087-1115, Refs. p.1113-1115.
Geological surveys, Tectonics, Arctic landscapes, Earth crust, Geologic structures, Geologic processes, Stratigraphy, Rock mechanics, United States—Alaska—Brooks Range

50-5199
Extreme-value statistics for snowpack water equivalent in the northeastern United States using the cooperative observer network.
Wilks, D.S., McKay, M., *Journal of applied meteorology,* May 1996, 35(5), p.706-713, 15 refs.
Precipitation (meteorology), Snow hydrology, Snow depth, Snow density, Snow surveys, Snow water equivalent, Distribution, Statistical analysis, Long range forecasting, Records (extremes), Weather stations

50-5200
Kinetics of compaction of granular ices H_2O, CO_2 and $(NH_3)_x(H_2O)_{1-x}$ at pressures of 2-20 MPa and in temperatures of 100-270 K. Application to the physics of the icy satellites.
Leliwa-Kopystyński, J., Kossacki, K.J., *Planetary and space science,* July 1995, 43(7), p.851-861, 26 refs.
Extraterrestrial ice, Satellites (natural), Regolith, Surface structure, Porosity, Simulation, Frozen liquids, Admixtures, Ice density, Density (mass/volume), Mechanical tests, High pressure tests, Compaction, Thin sections

50-5201
Alberta Hail Project Data Archive available on the World Wide Web.
Kochtubajda, B., Johnson, M., Humphrey, C., Lozowski, E.P., *American Meteorological Society. Bulletin,* Mar. 1996, 77(3), p.564-567.
Precipitation (meteorology), Meteorological data, Research projects, Hail, Ice storms, Data processing, Computer programs

50-5202
Modelling the redistribution of runoff caused by global warming.
Martinec, J., Rango, A., Roberts, R., *American Water Resources Association. Proceedings,* June 1994, p.153-161, 5 refs.
Climatology, Global warming, River basins, Runoff forecasting, Hydrography, Snow hydrology, Snowmelt, Seasonal variations, Simulation, Models

50-5203
1993 biennial report.
University of Washington. College of Ocean & Fisheries Science. Applied Physics Laboratory, Seattle, University of Washington, 1993, 52p.
Oceanography, Research projects, Oceanographic surveys, Sea ice distribution, Ocean currents, Ice surveys, Ice openings, Remote sensing, Imaging, Underwater acoustics, Military equipment, Tests, Arctic Ocean

50-5204
Detection of multilayer cirrus cloud systems using AVHRR data: verification based on FIRE II IFO composite measurements.
Ou, S.C., Liou, K.N., Baum, B.A., *Journal of applied meteorology,* Feb. 1996, 35(2), p.178-191, 30 refs.
Clouds (meteorology), Cloud cover, Classifications, Radiometry, Sounding, Lidar, Classifications, Correlation, Ice detection

50-5205
Measurements of NO_x and aerosol particles at the Ny-Ålesund Zeppelin mountain station on Svalbard: influence of regional and local pollution sources.
Beine, H.J., Engardt, M., Jaffe, D.A., Hov, Ø., Holmén, K., Stordal, F., *Atmospheric environment,* Apr. 1996, 30(7), p.1067-1079, 40 refs.
Polar atmospheres, Atmospheric boundary layer, Climatology, Atmospheric composition, Air pollution, Atmospheric circulation, Aerosols, Turbulent diffusion, Sampling, Origin, Seasonal variations, Environmental tests, Norway—Svalbard

50-5206
Ratio of aerosol optical absorption coefficients to sulfur concentrations, as an indicator of smoke from forest fires when sampling in polar regions.
Polissar, A.V., Hopke, P.K., Malm, W.C., Sisler, J.F., *Atmospheric environment,* Apr. 1996, 30(7), p.1147-1157, 18 refs.
Polar atmospheres, Atmospheric boundary layer, Climatology, Air pollution, Haze, Forest fires, Aerosols, Chemical composition, Radiation absorption, Sampling, Seasonal variations, Statistical analysis, Environmental tests

50-5207
Winter effects on hydraulic conductivity of compacted clay—discussion.
Day, R.W., Vanapalli, S.K., Barbour, S.L., Benson, C.H., *Journal of geotechnical engineering,* Jan. 1996, 122(1), p.85-88, 14 refs. For pertinent paper see 49-2499.
Soil freezing, Clay soils, Soil compaction, Saturation, Freeze thaw cycles, Freeze thaw tests, Ice lenses, Hydraulics, Soil water migration, Permeability

50-5208
Glaciological research in Svalbard: a bibliography.
Macqueen, A.D., World Data Centre 'C' for Glaciology. WDC-C bibliographies. Series B. Regional studies in glaciology, Cambridge, Scott Polar Research Institute, 1993, 44p.
Glaciology, Research projects, Bibliographies, Norway—Svalbard

50-5209
Use of low temperature SEM to locate free water in frozen, hydrated seed tissues of *Glycine max* (Leguminosae).
Yaklich, R.W., Wergin, W.P., Erbe, E.F., *American journal of botany,* May 1996, 83(5), p.550-555, 16 refs.
Plants (botany), Plant tissues, Plant physiology, Cryogenics, Freezing, Scanning electron microscopy, Stereoscopy, Water content, Moisture detection, Low temperature tests, Laboratory techniques

50-5210
Hydrochemical response of upland Precambrian Shield catchments to additions of H_2SO_4 and NH_4NO_3 during snowmelt.
Allan, C., *Canadian journal of fisheries and aquatic sciences,* Oct. 1995, 52(10), p.2213-2228, With French summary. 45 refs.
Watersheds, Precipitation (meteorology), Aerosols, Snow impurities, Runoff, Water pollution, Snow hydrology, Snowmelt, Hydrogeochemistry, Ion exchange, Ion density (concentration), Sampling

50-5211
Horizontal distribution of sea-ice microalgae: environmental control and spatial processes (southeastern Hudson Bay, Canada).
Monti, D., Legendre, L., Therriault, J.C., Demers, S., *Marine ecology progress series,* Mar. 28, 1996, 133(1-3), p.229-240, 54 refs.
Marine biology, Estuaries, Algae, Ecology, Biomass, Distribution, Classifications, Ice bottom surface, Ice water interface, Sampling, Statistical analysis, Ice cover effect, Hydrodynamics, Canada—Quebec—Hudson Bay

50-5212
Role of orbitally induced changes in tundra area in the onset of glaciation.
Gallimore, R.G., Kutzbach, J.E., *Nature,* June 6, 1996, 381(6582), p.503-505, 28 refs.
Glaciation, Tundra, Atmospheric circulation, Models, Climatic changes, Earth's orbit, Canada—Northwest Territories

50-5213
Large deep freshwater lake beneath the ice of central East Antarctica.
Kapitsa, A.P., Ridley, J.K., Robin, G. de Q., Siegert, M.J., Zotikov, I.A., *Nature,* June 20, 1996, 381(6584), p.684-686, 20 refs.
Limnology, Ice sheets, Geochronology, Antarctica—Vostok Station
In 1974-75, an airborne radio-echo survey of ice depths over central East Antarctica led to the discovery of a sub-ice lake of unknown depth and composition, with an area of about 10,000 km^2 and lying beneath ca. 4 km of ice. In 1993, altimetric data from satellite measurements provided independent evidence of the lake's areal extent, thus confirming it to be the largest known sub-ice lake by an order of magnitude. Here new altimetric and radio-echo data are analyzed along with existing seismic data, to show that the lake is deep (mean depth of 125 m or more) and fresh, and that it has an area that exceeds previous estimates by about 50%—dimensions comparable with those of Lake Ontario. Residence time of the water in the lake is estimated to be of the order of tens of thousands of years; the mean age of water in the lake, since deposition as surface ice, is about one million years. Regional ice dynamics can be explained in terms of steady-state ice flow along and over the lake. (Auth.)

50-5214
Ozone layer: the road not taken.
Prather, M., Midgley, P., Rowland, F.S., Stolarski, R., *Nature,* June 13, 1996, 381(6583), p.551-554, 14 refs.
Ozone, Atmospheric composition, Air pollution, Stratosphere
The threat to the global ozone layer posed by CFCs and related halocarbons, as epitomized by losses over Antarctica followed by similar losses over the arctic regions, has been dispelled because, since the early 1970s, the global community has followed a path of scientific

understanding, public awareness, environmental activism and boycotts, national regulations, industry studies of CFC substitutes and, finally, an international agreement—the 1987 Montreal Protocol on Substances that Deplete the Ozone Layer. Without this sequence of events, which culminated first in restricted use of CFCs and later in a complete phase-out of these chemicals, ozone depletion would be worse than it is today and the global atmosphere would have been committed to a very different future over most of the next century. The authors compare the path they are now following—the amended Montreal Protocol and its implied future—with the most likely path of CFC growth and ozone depletion expected had not the CFC threat to the ozone layer been identified in 1974. (Auth. mod.)

50-5215

First data and future prospects for AMANDA, the antarctic muon and neutrino detector.

AMANDA Collaboration, *Antarctic journal of the United States*, 1994, 29(5), p.337-339, 3 refs.

Research projects, Atmospheric physics, Instruments, Radiation, Ice cores, Antarctica—Amundsen-Scott Station

The AMANDA high-energy neutrino observatory will address fundamental questions in astronomy and particle physics. AMANDA can search for the sources of the highest energy cosmic rays and for dark matter, it can address the question of whether neutrinos have mass; and it can look for entirely unanticipated phenomena. In contrast to high-energy photons, which are absorbed by matter, high-energy neutrinos can help scientists do a tomographic study of such objects as active galactic nuclei and even the Earth's core.

50-5216

Movement of fuel spills in the Ross Ice Shelf.

Tumeo, M.A., Larson, M.K., *Antarctic journal of the United States*, 1994, 29(5), p.373-374.

Ice shelves, Impurities, Hydrocarbons, Ice cores, Chemical analysis, Environmental tests, Fuels, Antarctica—McMurdo Station, Antarctica—Ross Ice Shelf

Williams Field provides logistical support to McMurdo Station and manages large amounts of fuel for their cargo planes. Numerous spills have occurred at this site with little recovery or remediation of the spilled fuel. The spill which happened on Dec. 3, 1993, came from a flexible pipeline midway between McMurdo Station and Williams Field, on the Ross Ice Shelf. A fuel-line-connection failure released an estimated 11,400 L of JP-8 on the ice. Because the fuel that spilled was originally above 0°C, heat transferred into the ice and created two cone-shaped holes approximately 2 m in diameter and 4 to 5 m deep. No remediation efforts were taken, and the site was marked "off limits." Cores were taken from five holes drilled by the Polar Ice Coring Office using a 10.16 cm drill. The data collected indicate that fuel spilled on an ice shelf will travel almost straight down from the spill site with very little horizontal dispersion until a confining layer of salt-water-saturated ice is encountered. At that point, the fuel will move horizontally, spreading out on top of the salt-water-saturated layer. The fuel appears to move rather rapidly, with an estimated maximum rate of 0.8 m per day, assuming isotropic conditions.

50-5217

Distribution and transport of atmospheric water vapour over the arctic basin.

Serreze, M.C., Rehder, M.C., Barry, R.G., Kahl, J.D., Zaitseva, N.A., *International journal of climatology*, July 1995, 15(7), p.709-727, 29 refs.

Climatology, Marine atmospheres, Polar atmospheres, Atmospheric composition, Radio echo soundings, Drift stations, Water vapor, Humidity, Moisture transfer, Distribution, Seasonal variations, Statistical analysis, Arctic Ocean

50-5218

Identification of Heinrich layers in core KS01 north-eastern Atlantic (46°N, 17°W), implications for their origin.

Auffret, G.A., Boelaert, A., Vergnaud-Grazzini, C., Müller, C., Kerbrat, R., *Marine geology*, Apr. 1996, 131(1-2), Meeting of the European Union of Geosciences, 7th, Strasbourg, France, Apr. 4-8, 1993. Special Symposium on Paleoceanography of the North Atlantic Region. Selected papers. Edited by Tj.C.E. van Weering et al, p.5-20, 43 refs.

Oceanography, Pleistocene, Bottom sediment, Ice rafting, Ice melting, Salinity, Biomass, Sediment transport, Drill core analysis, Stratigraphy, Isotope analysis, Diagenesis, Atlantic Ocean

50-5219

Biogenic carbonate and ice-rafted debris (Heinrich layer) accumulation in deep-sea sediments from a Northeast Atlantic piston core.

van Kreveld, S.A., Knappertsbusch, M., Ottens, J., Ganssen, G.M., van Hinte, J.E., *Marine geology*, Apr. 1996, 131(1-2), Meeting of the European Union of Geosciences, 7th, Strasbourg, France, Apr. 4-8, 1993. Special Symposium on Paleoceanography of the North Atlantic Region. Selected papers. Edited by Tj.C.E. van Weering et al, p.21-46, Refs. p.43-46.

Oceanography, Pleistocene, Paleoecology, Biomass, Bottom sediment, Drill core analysis, Ice rafting, Sediment transport, Isotope analysis, Radioactive age determination, Stratigraphy, Atlantic Ocean

50-5220

Evidence for Heinrich layers off Portugal (Tore Seamount: 39°N, 12°W).

Lebreiro, S.M., Moreno, J.C., McCave, I.N., Weaver, P.P.E., *Marine geology*, Apr. 1996, 131(1-2), Meeting of the European Union of Geosciences, 7th, Strasbourg, France, Apr. 4-8, 1993. Special Symposium on Paleoceanography of the North Atlantic Region. Selected papers. Edited by Tj.C.E. van Weering et al, p.47-56, 38 refs.

Oceanography, Pleistocene, Bottom sediment, Ice rafting, Ice melting, Sediment transport, Drill core analysis, Isotope analysis, Geochemistry, Atlantic Ocean

50-5221

Linking physical property records of Quaternary sediments to Heinrich events.

Chi, J., Mienert, J., *Marine geology*, Apr. 1996, 131(1-2), Meeting of the European Union of Geosciences, 7th, Strasbourg, France, Apr. 4-8, 1993. Special Symposium on Paleoceanography of the North Atlantic Region. Selected papers. Edited by Tj.C.E. van Weering et al, p.57-73, 38 refs.

Oceanography, Pleistocene, Marine geology, Quaternary deposits, Marine deposits, Drill core analysis, Isotope analysis, Magnetic properties, Bottom sediment, Sedimentation, Icebergs, Ice rafting, Geochronology, Atlantic Ocean

50-5222

High resolution stratigraphy of the Faeroe-Shetland Channel and its relation to North Atlantic paleoceanography: the last 87 kyr.

Rasmussen, T.L., van Weering, Tj.C.E., Labeyrie, L., *Marine geology*, Apr. 1996, 131(1-2), Meeting of the European Union of Geosciences, 7th, Strasbourg, France, Apr. 4-8, 1993. Special Symposium on Paleoceanography of the North Atlantic Region. Selected papers. Edited by Tj.C.E. van Weering et al, p.75-88, 58 refs.

Pleistocene, Oceanography, Ocean currents, Convection, Quaternary deposits, Bottom sediment, Drill core analysis, Stratigraphy, Isotope analysis, Correlation, Geochronology, Norway—Norwegian Sea

50-5223

Monitoring Termination II at high latitude: anomalies in the planktic foraminiferal record.

Bauch, H.A., *Marine geology*, Apr. 1996, 131(1-2), Meeting of the European Union of Geosciences, 7th, Strasbourg, France, Apr. 4-8, 1993. Special Symposium on Paleoceanography of the North Atlantic Region. Selected papers. Edited by Tj.C.E. van Weering et al, p.89-102, 42 refs.

Pleistocene, Oceanography, Paleoecology, Ocean currents, Bottom sediment, Drill core analysis, Isotope analysis, Stratigraphy, Ice rafting, Ice melting, Geochronology

50-5224

Ice rafting history from the Spitsbergen ice cap over the last 200 kyr.

Lloyd, J.M., Kroon, D., Boulton, G.S., Laban, C., Fallick, A., *Marine geology*, Apr. 1996, 131(1-2), Meeting of the European Union of Geosciences, 7th, Strasbourg, France, Apr. 4-8, 1993. Special Symposium on Paleoceanography of the North Atlantic Region. Selected papers. Edited by Tj.C.E. van Weering et al, p.103-121, 35 refs.

Oceanography, Pleistocene, Glacial geology, Bottom sediment, Drill core analysis, Glacier oscillation, Icebergs, Ice rafting, Stratigraphy, Particle size distribution, Geochronology, Norway—Spitsbergen

50-5225

Iceberg detection using ERS-1 synthetic aperture radar.

Willis, C.J., Macklin, J.T., Partington, K.C., Teleki, K.A., Rees, W.G., Williams, R.G., *International journal of remote sensing*, June 1996, 17(9), p.1777-1795, 61 refs.

Sea ice distribution, Spaceborne photography, Synthetic aperture radar, Icebergs, Classifications, Ice detection, Backscattering, Image processing, Resolution, Accuracy

50-5226

Arctic and environmental change.

Wadhams, P., ed, Dowdeswell, J.A., ed, Schofield, A.N., ed, *Royal Society of London. Philosophical transactions. Series A. Physical sciences and engineering*, Aug. 15, 1995, 352(1699), 187p., Refs. passim. Discussion meeting organized by the editors, held Oct. 12-13, 1994. For individual papers see 50-5227 through 50-5240.

Polar atmospheres, Atmospheric circulation, Air ice water interaction, Sea ice distribution, Ocean currents, Glacier oscillation, Paleoclimatology, Global warming

50-5227

Modelling arctic climate change.

Cattle, H., Crossley, J., *Royal Society of London. Philosophical transactions. Series A. Physical sciences and engineering*, Aug. 15, 1995, 352(1699), Arctic and environmental change. Edited by P. Wadhams, J.A. Dowdeswell, and A.N. Schofield, p.201-213, 30 refs.

Polar atmospheres, Marine atmospheres, Atmospheric circulation, Ocean currents, Air ice water interaction, Sea ice distribution, Ice edge, Ice cover thickness, Global warming, Computerized simulation

50-5228

Variability in atmospheric circulation and moisture flux over the Arctic.

Serreze, M.C., Barry, R.G., Rehder, M.C., Walsh, J.E., *Royal Society of London. Philosophical transactions. Series A. Physical sciences and engineering*, Aug. 15, 1995, 352(1699), Arctic and environmental change. Edited by P. Wadhams, J.A. Dowdeswell, and A.N. Schofield, p.215-225, 27 refs.

Polar atmospheres, Marine atmospheres, Atmospheric circulation, Humidity, Moisture transfer, Turbulent exchange, Precipitation (meteorology), Hydrologic cycle

50-5229

Stratospheric polar vortex and sub-vortex: fluid dynamics and midlatitude ozone loss.

McIntyre, M.E., *Royal Society of London. Philosophical transactions. Series A. Physical sciences and engineering*, Aug. 15, 1995, 352(1699), Arctic and environmental change. Edited by P. Wadhams, J.A. Dowdeswell, and A.N. Schofield, p.227-240, 36 refs.

Polar atmospheres, Stratosphere, Atmospheric circulation, Atmospheric composition, Ozone, Turbulent exchange

It has been suggested on the basis of certain chemical observations that the wintertime stratospheric polar vortex might act as a chemical processor, or flow reactor, through which large amounts of air—of the order of one vortex mass per month or three vortex masses per winter—flow downwards and then outwards to middle latitudes in the lower stratosphere. If such a flow were to exist, then most of the air involved would become chemically 'activated', or primed for ozone destruction, while passing through the low temperatures of the vortex where fast heterogeneous reactions can take place on polar-stratospheric-cloud particles. There could be serious implications

here for the understanding of ozone-hole chemistry and for mid-latitude ozone loss, both in the Northern and in the Southern Hemisphere. This paper will briefly assess current fluid-dynamical thinking about flow through the vortex. It is concluded that the vortex typically cannot sustain an average throughput much greater than about a sixth of a vortex mass per month, or half a vortex mass per winter, unless a large and hitherto unknown mean circumferential force acts persistently on the vortex in an eastward or 'spin-up' sense, prograde with the Earth's rotation. By contrast, the 'sub-vortex' below pressure-altitudes of about 70 hPa (more precisely, on isentropic surface below potential temperatures of about 400 K) is capable of relatively large mass throughput depending, however, on tropospheric weather beneath, concerning which observational data are sparse. (Auth.)

50-5230

Ozone loss in middle latitudes and the role of the arctic polar vortex.

Pyle, J.A., *Royal Society of London. Philosophical transactions. Series A. Physical sciences and engineering,* Aug. 15, 1995, 352(1699), Arctic and environmental change. Edited by P. Wadhams, J.A. Dowdeswell, and A.N. Schofield, p.241-245, 12 refs.

Polar atmospheres, Atmospheric circulation, Atmospheric composition, Polar stratospheric clouds, Ozone

50-5231

Solar irradiance, air pollution and temperature changes in the Arctic.

Stanhill, G., *Royal Society of London. Philosophical transactions. Series A. Physical sciences and engineering,* Aug. 15, 1995, 352(1699), Arctic and environmental change. Edited by P. Wadhams, J.A. Dowdeswell, and A.N. Schofield, p.247-258, 42 refs.

Polar atmospheres, Atmospheric circulation, Air pollution, Haze, Insolation, Radiation balance, Air temperature, Weather stations, Meteorological data, Statistical analysis, Global warming

A highly significant decrease in the annual sums of global irradiance reaching the surface of the Arctic, averaging 0.36 W/m^2 per year, was derived from an analysis of 389 complete site-years of measurement, beginning in 1950, at 22 pyranometer stations within the Arctic Circle. The smaller database of radiation balance measurements available showed a much smaller and statistically non-significant change. Reductions in global irradiance were most frequent in the early spring months and in the western sectors of the Arctic, coinciding with the seasonal and spatial distribution of the incursions of polluted air which give rise to the Arctic Haze. Irradiance measured in Antarctica during the same period showed a similar and more widespread decline despite the lower concentrations of pollutants. A marked increase in the surface radiation balance was recorded. Possible reasons for these interpolar anomalies and their consequences for temperature change are discussed. (Auth.)

50-5232

Arctic terrestrial ecosystems and environmental change.

Callaghan, T.V., Jonasson, S., *Royal Society of London. Philosophical transactions. Series A. Physical sciences and engineering.* Aug. 15, 1995, 352(1699), Arctic and environmental change. Edited by P. Wadhams, J.A. Dowdeswell, and A.N. Schofield, p.259-276, 59 refs.

Tundra climate, Tundra soils, Tundra vegetation, Plant ecology, Vegetation patterns, Ecosystems, Nutrient cycle, Environmental impact, Global warming

50-5233

Climate change and biological oceanography of the Arctic Ocean.

Gradinger, R., *Royal Society of London. Philosophical transactions. Series A. Physical sciences and engineering,* Aug. 15, 1995, 352(1699), Arctic and environmental change. Edited by P. Wadhams, J.A. Dowdeswell, and A.N. Schofield, p.277-286, 54 refs.

Sea ice distribution, Ice cover effect, Ice water interface, Cryobiology, Marine biology, Algae, Biomass, Ecology, Ecosystems, Global warming, Arctic Ocean

50-5234

Thermohaline circulation of the Arctic Ocean and the Greenland Sea.

Rudels, B., *Royal Society of London. Philosophical transactions. Series A. Physical sciences and engineering,* Aug. 15, 1995, 352(1699), Arctic and environmental change. Edited by P. Wadhams, J.A. Dowdeswell, and A.N. Schofield, p.287-299, 42 refs.

Air ice water interaction, Ice cover effect, Ice water interface, Ocean currents, Water transport, Water temperature, Salinity, Convection, Arctic Ocean, Greenland Sea

50-5235

Arctic sea ice extent and thickness.

Wadhams, P., *Royal Society of London. Philosophical transactions. Series A. Physical sciences and engineering,* Aug. 15, 1995, 352(1699), Arctic and environmental change. Edited by P. Wadhams, J.A. Dowdeswell, and A.N. Schofield, p.301-319, 58 refs.

Ice surveys, Sea ice distribution, Ice cover thickness, Ice edge, Ice volume, Air ice water interaction, Drift, Global warming

50-5236

Glaciers in the high Arctic and recent environmental change.

Dowdeswell, J.A., *Royal Society of London. Philosophical transactions. Series A. Physical sciences and engineering,* Aug. 15, 1995, 352(1699), Arctic and environmental change. Edited by P. Wadhams, J.A. Dowdeswell, and A.N. Schofield, p.321-334, 40 refs.

Glacier surveys, Glacial meteorology, Glacier oscillation, Glacier mass balance, Sea level, Ice cores, Meteorological data, Statistical analysis, Global warming

50-5237

Elevation change of the Greenland ice sheet and its measurement with satellite radar altimetry.

Wingham, D.J., *Royal Society of London. Philosophical transactions. Series A. Physical sciences and engineering,* Aug. 15, 1995, 352(1699), Arctic and environmental change. Edited by P. Wadhams, J.A. Dowdeswell, and A.N. Schofield, p.335-346, 20 refs.

Glacier surveys, Ice sheets, Glacier thickness, Glacier mass balance, Glacier oscillation, Height finding, Radio echo soundings, Spaceborne photography, Greenland

50-5238

Permafrost and climate change: geotechnical implications.

Williams, P.J., *Royal Society of London. Philosophical transactions. Series A. Physical sciences and engineering,* Aug. 15, 1995, 352(1699), Arctic and environmental change. Edited by P. Wadhams, J.A. Dowdeswell, and A.N. Schofield, p.347-358, 29 refs.

Permafrost beneath structures, Permafrost heat balance, Permafrost preservation, Pipelines, Active layer, Frost heave, Ground thawing, Thermokarst, Tundra climate, Soil air interface, Global warming

50-5239

Greenland ice core records and rapid climate change.

Dowdeswell, J.A., White, J.W.C., *Royal Society of London. Philosophical transactions. Series A. Physical sciences and engineering,* Aug. 15, 1995, 352(1699), Arctic and environmental change. Edited by P. Wadhams, J.A. Dowdeswell, and A.N. Schofield, p.359-371, 23 refs.

Ice sheets, Ice cores, Glacial meteorology, Glacier oscillation, Glacier ice, Ice composition, Ice dating, Firn stratification, Drill core analysis, Isotope analysis, Ice age theory, Paleoclimatology, Global change, Greenland

50-5240

Non-steady behaviour in the Cenozoic polar North Atlantic system: the onset and variability of Northern Hemisphere glaciations.

Thiede, J., Myhre, A.M., *Royal Society of London. Philosophical transactions. Series A. Physical sciences and engineering,* Aug. 15, 1995, 352(1699), Arctic and environmental change. Edited by P. Wadhams, J.A. Dowdeswell, and A.N. Schofield, p.373-385, 34 refs.

Marine geology, Marine deposits, Bottom sediment, Drill core analysis, Glaciation, Ice rafting, Ice age theory, Geochronology, Paleoclimatology, Global change, Norwegian Sea, Greenland Sea

50-5241

Of ocean waves and sea ice.

Squire, V.A., Dugan, J.P., Wadhams, P., Rottier, P.J., Liu, A.K., *Annual review of fluid mechanics,* 1995, Vol.27, p.115-168, Refs. p.164-168.

DLC QC145.A57 Vol.27 1995

Ocean waves, Ice water interface, Ice cover effect, Ice edge, Ice floes, Pack ice, Fast ice, Ice elasticity, Ice pressure, Ice deformation, Wave propagation, Mathematical models

50-5242

Climate dynamics and global change.

Lindzen, R.S., *Annual review of fluid mechanics,* 1994, Vol.26, p.353-378, 60 refs.

DLC QC145.A57 Vol.26 1994

Atmospheric circulation, Atmospheric composition, Air water interactions, Ocean currents, Water vapor, Heat balance, Ice age theory, Paleoclimatology, Global warming, Computerized simulation

50-5243

Ice/metal interfaces: fracture energy and fractography.

Wei, Y., Adamson, R.M., Dempsey, J.P., *Journal of materials science,* Feb. 15, 1996, 31(4), p.943-947, 25 refs.

Ice mechanics, Ice solid interface, Metals, Ice adhesion, Ice deformation, Plastic deformation, Fracture zones, Cracking (fracturing), Crack propagation, Ice crystal replicas, Scanning electron microscopy

50-5244

Surface features of interstellar ice.

McCoustra, M., Williams, D.A., *Royal Astronomical Society. Monthly notices,* Apr. 1, 1996, 279(3), p.L53-L56, 14 refs.

Extraterrestrial ice, Ice physics, Remote sensing, Ice detection, Cosmic dust, Surface properties, Molecular structure, Hydrogen bonds, Ice optics, Infrared radiation, Simulation, Spectra

50-5245

Correction for *in-situ* ^{14}C in antarctic ice with ^{14}CO.

Van Roijen, J., Van Der Borg, K., De Jong, A.F.M., *Radiocarbon,* 1995, 37(2), International Radiocarbon Conference, 15th, Glasgow, Scotland, 15-19 Aug. 1994. Proceedings, p.165-169, 10 refs.

Ice cores, Ice composition, Ice dating, Antarctica—Heimefront Range

The authors use a dry extraction method to obtain trapped CO_2 from shallow ice cores from a blue ice area of East Antarctica. *In situ*-produced ^{14}C extracted in $^{14}CO_2$ and ^{14}CO concentrations show a mean ratio of 3.4±0.4. Correction for *in situ* $^{14}CO_2$ resulted in ice ages within 7-13 ka. The accumulation and ablation rates determined from the *in situ* production of 7-20 cm/yr and 10-13 cm/yr, respectively, agree with field measurements and thus indicate close to total efficiency of extraction.

50-5246

Application of AMS ^{14}C dating to ice core research.

Wilson, A.T., *Radiocarbon,* 1995, 37(2), International Radiocarbon Conference, 15th, Glasgow, Scotland, 15-19 Aug. 1994. Proceedings, p.637-641, 9 refs.

Ice cores, Ice dating, Ice composition, Paleoclimatology, Atmospheric composition, Antarctica—McMurdo Dry Valleys, Antarctica—Vostok Station

The author describes the use of the accelerator mass spectrometer (AMS) sublimation technique to ^{14}C-date polar ice cores. An unexpected result of this work has been to extend the understanding of how polar ice sheets entrap and record the past composition of the

Earth's atmosphere. This work has led to the discovery of a new phenomenon in which CO_2 and other greenhouse gases can be entrapped in cold (never melted) polar ice sheets. (Auth.)

50-5247

From card catalog to computer file: the impact of technology on the production of polar bibliographic databases.

Andrews, M., *Geoscience Information Society. Proceedings,* 1994, Vol.25, p.13-19, 10 refs.

DLC QE48.85.G43 1994

Polar regions, Computer programs, Data processing, Bibliographies

The impact of technology on the production of polar bibliographic databases, which contain significant amounts of geoscience information, is traced from print to Internet. Catalog cards, printed book catalogs, and printed abstracts and indexes evolved in the late 1970s and early 1980s from computer-produced printed services into commercial online databases. The personal computer, which arrived in the mid 1980s, allowed widespread access to polar databases online and from 1989 on to CD-ROM. The global search capability on CD-ROM files evidenced a significant amount of duplication among separately produced databases, raising concerns about efficient use of resources. It also became apparent that a significant amount of the polar regions literature was escaping effective bibliographic control. Specific instances of overlap and of lack of coverage were identified on *PolarPac* and *Arctic & Antarctic Regions,* and a plan was formulated to distribute responsibilities for indexing and accessioning the polar regions literature found on these CD-ROMs. The Internet is providing the technology for a current file to be maintained by the database producers, offering real-time access by institutional clientele at the same time as the database producers cooperatively build an international bibliographic database with reduced duplication and enhanced coverage.

50-5248

Radar image tracking and its use in a short-term snowfall prediction system.

Neilley, P.P., Carson, L.P., International Conference on Radar Meteorology, 26th, Norman, OK, May 24-28, 1993. Preprint paper, Boston, American Meteorological Society, 1993, p.148-150, 5 refs.

Precipitation (meteorology), Snowfall, Falling snow, Weather forecasting, Remote sensing, Radar echoes, Image processing, Reflectivity

50-5249

Mesoscale structures along wind-parallel bands in lake-effect snows.

Kristovich, D.A.R., International Conference on Radar Meteorology, 26th, Norman, OK, May 24-28, 1993. Preprint paper, Boston, American Meteorological Society, 1993, p.288-290, 10 refs.

Precipitation (meteorology), Turbulent boundary layer, Air flow, Snowstorms, Convection, Lake effects, Radar echoes, Reflectivity, Wind direction

50-5250

Doppler radar analysis of a severe spring snowstorm.

Shields, M.T., Rauber, R.M., Ramamurthy, M.K., Guo, Q.Z., International Conference on Radar Meteorology, 26th, Norman, OK, May 24-28, 1993. Preprint paper, Boston, American Meteorological Society, 1993, p.291-293, 3 refs.

Precipitation (meteorology), Snowstorms, Remote sensing, Radar echoes, Turbulent boundary layer, Wind direction, Profiles

50-5251

Investigation of run-off and channel development in high Northern Limestone Alps (Höllental/Wettersteingebirge). [Untersuchungen über Abflußverhalten und Gerinneformung in den Nördlichen Kalkhochalpen (Höllental/Wettersteingebirge)]

Becht, M., *Petermanns Geographische Mitteilungen,* 1996, 140(1), p.23-32, In German with English and Russian summaries. 10 refs.

Watersheds, Alpine landscapes, Surface drainage, Runoff, Stream flow, Geomorphology, Water table, Water erosion, Precipitation (meteorology), Snowmelt, Sediment transport, Germany—Alps

50-5252

Comparison of ultrastructure of germinating pea leaves prepared by high-pressure freezing-freeze substitution and conventional chemical fixation.

Kaneko, Y., Walther, P., *Journal of electron microscopy,* Apr. 1995, 144(2), p.104-109, 10 refs.

Cryogenics, Preserving, Freezing, Plant tissues, Microstructure, Scanning electron microscopy, Thin sections, Structural analysis

50-5253

Decadal evolution of the antarctic ozone hole.

Jiang, Y., Yung, Y.L., Zurek, R.W., *Journal of geophysical research,* Apr. 20, 1996, 101(D4), p.8985-8999, 73 refs.

Polar atmospheres, Climatology, Air pollution, Climatic changes, Stratosphere, Aerosols, Ozone, Atmospheric density, Degradation, Spectroscopy, Seasonal variations

Ozone column amounts obtained by the total ozone mapping spectrometer (TOMS) in the southern polar region are analyzed during late austral winter and spring for 1980-1991 using area-mapping techniques and area-weighted vortex averages. The principal results are: (1) there is a distinct change after 1985 in the vortex-averaged column ozone depletion rate during Sep. and Oct., the period of maximum ozone loss, and (2) the vortex-averaged column ozone in late Aug. (day 240) has dropped by 70 Dobson units in a decade due to the loss in the dark and the dilution effect. The authors interpret the year-to-year trend in the ozone depletion rate during the earlier part of the decade as due to the rise of anthropogenic chlorine in the atmosphere. The slower trend at the end of the decade indicates saturation of ozone depletion in the vortex interior, in that chlorine amounts in the mid-1980s were already sufficiently high to deplete most of the ozone in air within the isolated regions of the lower-stratospheric polar vortex. In subsequent years, increases in stratospheric chlorine may have enhanced wintertime chemical loss of ozone in the south polar vortex even before major losses during the antarctic spring. (Auth. mod.)

50-5254

The presence of metastable HNO_3/H_2O solid phases in the stratosphere inferred from ER 2 data.

Tabazadeh, A., Toon, O.B., *Journal of geophysical research,* Apr. 20, 1996, 101(D4), p.9071-9078, 47 refs.

Climatology, Polar atmospheres, Polar stratospheric clouds, Aerosols, Cloud physics, Solid phases, Ice vapor interface, Vapor pressure, Adsorption, Sedimentation, Sampling

50-5255

Photooxidants in the marine arctic troposphere in summer.

Weller, R., Schrems, O., *Journal of geophysical research,* Apr. 20, 1996, 101(D4), p.9139-9147, 43 refs.

Climatology, Atmospheric boundary layer, Polar atmospheres, Air pollution, Air masses, Advection, Turbulent diffusion, Atmospheric composition, Aerosols, Ozone, Degradation, Photochemical reactions, Sounding, Arctic Ocean

50-5256

Isotopic measurements of precipitation on central Asian glaciers (southeastern Tibet, northern Himalayas, central Tien Shan).

Aĭzen, V.B., Aĭzen, E.M., Melack, J., Martma, T., *Journal of geophysical research,* Apr. 20, 1996, 101(D4), p.9185-9196, 37 refs.

Climatology, Precipitation (meteorology), Atmospheric circulation, Moisture transfer, Hydrologic cycle, Glacial meteorology, Snow cover, Ice cores, Stratigraphy, Snow composition, Isotope analysis, Statistical analysis, Himalaya Mountains

50-5257

Age estimation of atmospheric black carbon over Finland from combined aerosol size distribution and radon progeny measurements.

Raunemaa, T., Kuuspalo, K., Ålander, T., Mirme, A., Tamm, E., *Journal of aerosol science,* Apr. 1996, 27(3), p.455-465, 39 refs.

Climatology, Subpolar regions, Marine atmospheres, Atmospheric composition, Sampling, Aerosols, Carbon black, Particle size distribution, Radioactive age determination, Isotope analysis, Mass transfer, Wind factors, Finland

50-5258

Interannual variability of sea-level pressure, sea-ice and runoff over the Arctic.

Power, S.B., Mysak, L.A., McGill University. Centre for Climate and Global Change Research. Report No.91-6, Montreal, Apr. 1991, 41p. + append., Refs. p.28-37.

Climatology, Oceanography, Runoff, Marine atmospheres, Air ice water interaction, Atmospheric pressure, Atmospheric circulation, Sea ice distribution, Drift, Statistical analysis, Correlation, Seasonal variations, Arctic Ocean

50-5259

Climatic atlas of seasonal sea-level pressure and sea-ice concentration in the Hudson Bay-Baffin Bay-Labrador Sea region: 1953-1988.

Wang, J., Mysak, L.A., McGill University. Centre for Climate and Global Change Research. Report No.91-6, Montreal, Mar. 1991, 103p., 11 refs.

Climatology, Marine atmospheres, Atmospheric circulation, Atmospheric pressure, Sea ice distribution, Ice edge, Air ice water interaction, Seasonal variations, Maps, Canada—Quebec—Hudson Bay

50-5260

Numerical simulations of topographic Rossby waves along the East Greenland front.

Maslowski, W., *Journal of geophysical research,* Apr. 15, 1996, 101(C4), p.8775-8787, 53 refs.

Oceanography, Ocean currents, Wave propagation, Ocean bottom, Bottom topography, Wind factors, Turbulent exchange, Topographic effects, Simulation, Mathematical models, Greenland Sea

50-5261

Formation and evolution of the surface mixed layer and halocline of the Arctic Ocean.

Rudels, B., Anderson, L.G., Jones, E.P., *Journal of geophysical research,* Apr. 15, 1996, 101(C4), p.8807-8821, 32 refs.

Oceanography, Sea ice, Ocean currents, Surface waters, Boundary layer, Convection, Water temperature, Salinity, Ice water interface, Ice melting, Ice cover effect, Profiles, Seasonal variations, Arctic Ocean

50-5262

Stability of M_2 critical latitude in the Barents Sea.

Furevik, T., Foldvik, A., *Journal of geophysical research,* Apr. 15, 1996, 101(C4), p.8823-8837, 27 refs.

Oceanography, Tidal currents, Stability, Profiles, Shear flow, Turbulent diffusion, Ice water interface, Ice cover effect, Mathematical models, Nutrient cycle, Biomass, Barents Sea

50-5263

Heat flux through sea ice in the western Weddell Sea: convective and conductive transfer processes.

Lytle, V.I., Ackley, S.F., MP 3825, *Journal of geophysical research,* Apr. 15, 1996, 101(C4), p.8853-8868, 27 refs.

Oceanography, Sea ice, Ice cover thickness, Ice heat flux, Air ice water interaction, Convection, Snow ice interface, Snow cover effect, Ice cover effect, Ice growth, Slush, Temperature measurement, Profiles, Antarctica—Weddell Sea

The heat flux through the snow and sea ice cover and at the ice/ocean interface were calculated at five sites in the western Weddell Sea during autumn and early winter 1992. In late Feb., three of the five sites had a slush layer at the snow/ice interface. As this slush layer froze to form snow ice, the dense brine which was rejected flowed out through brine drainage channels and was replaced by lower-salinity, nutrient-rich seawater from the ocean upper layer. As the slush layer froze over a 2-3 week period, the convection within the ice transported salt from the ice to the upper ocean and increased total heat flux through the overlying ice and snow cover. On an area-wide basis, approximately 10 cm of snow ice growth occurred within second-year pack ice. This ice growth, near the surface of the ice, provides a salt flux to the upper ocean equivalent to 5 cm of ice growth, despite the thick (about 1 m) ice cover, in addition to the ice growth in the small (area less than 5%) open water regions. (Auth. mod.)

50-5264

Response of a circular ice floe to ocean waves.
Meylan, M.H., Squire, V.A., *Journal of geophysical research,* Apr. 15, 1996, 101(C4), p.8869-8884, 29 refs.
Oceanography, Sea ice, Ice edge, Ice deformation, Ice floes, Ocean waves, Ice water interface, Wave propagation, Vibration, Strains, Flexural strength, Mathematical models, Boundary value problems, Fluid dynamics

50-5265

River-coastal sea ice interaction model: Mackenzie River Delta.
Searcy, C., Dean, K., Stringer, W., *Journal of geophysical research,* Apr. 15, 1996, 101(C4), p.8885-8894, 20 refs.
Oceanography, Estuaries, Deltas, Sea ice, Fast ice, Ice breakup, Ice melting, River flow, Spaceborne photography, Ice water interface, Heat flux, Heat transfer coefficient, Mathematical models, Canada—Northwest Territories—Mackenzie River

50-5266

Direct evidence for northward flow on the northwestern Bering Sea shelf.
Overland, J.E., Stabeno, P.J., Salo, S., *Journal of geophysical research,* Apr. 15, 1996, 101(C4), p.8971-8976, 21 refs.
Oceanography, Ocean currents, Drift stations, Water transport, Convection, Hydrography, Wind factors, Bering Sea

50-5267

Geochemistry of ashes from Vesterisbanken Seamount, Greenland Basin: implications for the evolution of an alkaline volcano.
Haase, K.M., Hartmann, M., Wallrabe-Adams, H.J., *Journal of volcanology and geothermal research,* Jan. 1996, 70(1-2), p.1-19, 38 refs.
Oceanography, Volcanoes, Magma, Volcanic ash, Marine deposits, Sedimentation, Drill core analysis, Stratigraphy, Geochemistry, Diagenesis, Greenland Sea

50-5268

Mathematical model of the freezing-thawing of saline frozen soil.
Vasil'ev, V.I., Maksimov, A.M., Petrov, E.E., Tsypkin, G.G., *Journal of applied mechanics and technical physics.* Mar. 1996, 36(5), p.689-696, Translated from Prikladnaia mekhanika i tekhnicheskaia fizika. 10 refs.
Frozen ground thermodynamics, Saline soils, Soil freezing, Freeze thaw cycles, Salt water, Phase transformations, Ice water interface, Heat transfer, Mathematical models, Drilling fluids, Admixtures

50-5269

Investigation of the dynamic loading of ice.
Chizhov, V.E., *Journal of applied mechanics and technical physics.* May 1996, 36(6), p.933-938, Translated from Prikladnaia mekhanika i tekhnicheskaia fizika. 10 refs.
Ice mechanics, Dynamic loads, Thermodynamic properties, Phase transformations, Ice melting, Temperature effects, Ice water interface, Shock waves, Mathematical models

50-5270

Automated DIMM telescope for Antarctica.
Dopita, M.A., Wood, P.R., Hovey, G.R., *Astronomical Society of Australia. Publications,* Jan. 1996, 13(1), p.39-43, 10 refs.
Temperature inversions, Ice surface, Instruments, Optical phenomena, Low temperature research, Weather stations, Antarctica—Charlie, Dome
A knowledge of the on-ice seeing is a key requirement for planning future antarctic observatories. In this paper, the authors discuss the likely negative impact on seeing produced by the development of the deep winter surface temperature inversion (Ekman layer). The Automated Astronomical Site Testing Observatory (AASTO) will deploy, as one of its complement of site-testing instruments, an automated differential image motion monitor (DIMM) telescope designed to generate seeing data throughout the antarctic winter. Here they describe the multi-aperture concept which has been developed for this mission, and touch upon some of the critical technological considerations associated with the low power budget and with the requirement of autonomous operation at very low temperature (-90°C). (Auth.)

50-5271

Preliminary investigation of the contribution of fast-ice algae to the spring phytoplankton bloom in Ellis Fjord, eastern Antarctica.

McMinn, A., *Polar biology,* Apr. 1996, 16(4), p.301-307, Refs. p.306-307.

Sea ice, Fast ice, Algae, Plankton, Biomass, Antarctica—Ellis Fjord

Algae released from fast-ice in Ellis Fjord make little contribution to subsequent phytoplankton growth. Dominant taxa in the interior ice community included *Nitzschia cylindrus* (Grun) Hasle, *Navicula glaciei* V.H. and a dinoflagellate cyst. Diatom mortality within the ice was high. The algal contribution to the phytoplankton from the fast ice was estimated by calculating the difference between algal biomass in ice cores taken on Nov. 14 with those taken on Dec. 18, 1992. The low contribution from the fast-ice of Ellis Fjord to the phytoplankton is similar to results from other antarctic fast-ice communities but is not necessarily reflective of processes occurring within either antarctic or arctic pack ice communities. An algal mat growing on the base of the fast-ice had a carbon standing crop of between 0.231 gC/m^2 and 0.022 gC/m^2. Much of this was delivered to the water column as the ice melted, while the remainder was exported. (Auth. mod.)

50-5272

On the behaviour of tropospheric and stratospheric ozone in northern Europe and in Antarctica 1987-90.

Taalas, P., *Finnish Meteorological Institute. Contributions,* June 1992, No.8, 88p., Refs. p.81-88.

Ozone, Stratosphere, Atmospheric composition, Polar atmospheres, Atmospheric circulation, Clouds (meteorology), Meteorological data, Meteorological instruments

Recent and future changes in stratospheric and tropospheric ozone may have serious ecological and health effects. These changes are mainly caused by man-made emissions of nitric compounds, carbon monoxide, hydrocarbons and halogenated species. Total ozone and ozone sounding observations were made in the Arctic and in Antarctica in 1987-90. Interhemispheric comparisons of the behavior of tropospheric and stratospheric ozone at high latitudes showed the stratospheric ozone depletion to be considerably higher at southern than at northern latitudes. (Auth. mod.)

50-5273

Bibliography on the hydrology of the Himalaya-Karakoram region.

Young, G.J., Neupane, B., *World Data Center A for Glaciology. Glaciological data. Report,* May 1996, GD-29, 122p., Approx. 2000 entries, some cited more than once.

Snow surveys, Glacier surveys, Snow hydrology, Glacial hydrology, Water reserves, Floods, Water erosion, Landslides, Bibliographies, Himalaya Mountains, Karakoram Mountains

50-5274

Proceedings.

Atmospheric Radiation Measurement (ARM) Science Team Meeting, 5th, San Diego, CA, Mar. 19-23, 1995, Washington, D.C., U.S. Department of Energy. Environmental Sciences Division, Apr. 1996, 402p., Refs. passim. For selected papers see 50-5275 through 50-5285.

Polar atmospheres, Atmospheric circulation, Atmospheric composition, Cloud physics, Cloud cover, Ice crystal optics, Ice crystal size, Aerosols, Radiation balance

50-5275

Modeling the summertime arctic cloudy boundary layer.

Curry, J.A., Pinto, J.O., McInnes, K.L., Atmospheric Radiation Measurement (ARM) Science Team Meeting, 5th, San Diego, CA, Mar. 19-23, 1995. Proceedings, Washington, D.C., U.S. Department of Energy. Environmental Sciences Division, Apr. 1996, p.63-67, 15 refs.

Polar atmospheres, Marine atmospheres, Atmospheric circulation, Cloud cover, Cloud physics, Atmospheric boundary layer, Turbulent boundary layer, Radiation balance, Computerized simulation

50-5276

Radiative transfer in atmosphere-sea ice-ocean system.

Jin, Z., Stamnes, K., Weeks, W.F., Tsay, S.C., Atmospheric Radiation Measurement (ARM) Science Team Meeting, 5th, San Diego, CA, Mar. 19-23, 1995. Proceedings, Washington, D.C., U.S. Department of Energy. Environmental Sciences Division, Apr. 1996, p.143-146, 11 refs.

Polar atmospheres, Marine atmospheres, Air ice water interaction, Ice heat flux, Snow heat flux, Cloud cover, Radiation balance, Computerized simulation

50-5277

Comparisons of cloud ice mass content retrieved from the radar-infrared radiometer method with aircraft data during the Second International Satellite Cloud Climatology Project Regional Experiment (FIRE-II).

Matrosov, S.Y., Heymsfield, A.J., Kropfli, R.A., Snider, J.B., Atmospheric Radiation Measurement (ARM) Science Team Meeting, 5th, San Diego, CA, Mar. 19-23, 1995. Proceedings, Washington, D.C., U.S. Department of Energy. Environmental Sciences Division, Apr. 1996, p.189-192, 5 refs.

Cloud physics, Ice crystal size, Particle size distribution, Radio echo soundings, Radiometry, Spaceborne photography

50-5278

Effect of particle nonsphericity on bidirectional reflectance of cirrus clouds.

Mishchenko, M.I., Rossow, W.B., Macke, A., Lacis, A.A., Atmospheric Radiation Measurement (ARM) Science Team Meeting, 5th, San Diego, CA, Mar. 19-23, 1995. Proceedings, Washington, D.C., U.S. Department of Energy. Environmental Sciences Division, Apr. 1996, p.211-213, 10 refs.

Cloud physics, Cloud cover, Cloud droplets, Ice crystal size, Ice crystal optics, Particle size distribution, Backscattering

50-5279

Radiative properties of ice clouds.

Mitchell, D.L., Koracin, D., Carter, E., Atmospheric Radiation Measurement (ARM) Science Team Meeting, 5th, San Diego, CA, Mar. 19-23, 1995. Proceedings, Washington, D.C., U.S. Department of Energy. Environmental Sciences Division, Apr. 1996, p.215-217, 5 refs.

Cloud physics, Cloud cover, Ice crystal optics, Ice crystal size, Particle size distribution

50-5280

Development and testing of an aerosol-stratus cloud parameterization scheme for middle and high latitudes.

Olsson, P.Q., Meyers, M.P., Kreidenweis, S., Cotton, W.R., Atmospheric Radiation Measurement (ARM) Science Team Meeting, 5th, San Diego, CA, Mar. 19-23, 1995. Proceedings, Washington, D.C., U.S. Department of Energy. Environmental Sciences Division, Apr. 1996, p.235-240, 9 refs.

Polar atmospheres, Atmospheric composition, Atmospheric circulation, Cloud physics, Cloud cover, Aerosols, Ice nuclei, Coalescence, Computerized simulation

50-5281

Airborne studies of submicron aerosol in the troposphere over West Siberia.

Panchenko, M.V., Zuev, V.E., Belan, B.D., Terpugova, S.A., Pol'kin, V.V., Tumakov, A.G., Atmospheric Radiation Measurement (ARM) Science Team Meeting, 5th, San Diego, CA, Mar. 19-23, 1995. Proceedings, Washington, D.C., U.S. Department of Energy. Environmental Sciences Division, Apr. 1996, p.241-243, 6 refs.

Atmospheric circulation, Atmospheric composition, Air pollution, Aerosols, Russia—Siberia

50-5282

Lidar dark band: an oddity of the radar bright band analogy.

Sassen, K., McIntosh, R.E., Sekelsky, S.M., Atmospheric Radiation Measurement (ARM) Science Team Meeting, 5th, San Diego, CA, Mar. 19-23, 1995. Proceedings, Washington, D.C., U.S. Department of Energy. Environmental Sciences Division, Apr. 1996, p.259-262, 4 refs.

Cloud physics, Precipitation (meteorology), Ice crystal optics, Snow optics, Snowflakes, Rain, Lidar

50-5283

Multi-Filter Rotating Shadowband Radiometer (MFRSR)-Precision Infrared Radiometer (PIR) platform in Fairbanks: scientific objectives.

Stamnes, K., Leont'eva, E.N., Atmospheric Radiation Measurement (ARM) Science Team Meeting, 5th, San Diego, CA, Mar. 19-23, 1995. Proceedings, Washington, D.C., U.S. Department of Energy. Environmental Sciences Division, Apr. 1996, p.307-310, 5 refs.

Polar atmospheres, Cloud physics, Cloud cover, Transparence, Radiation balance, Radiometry

50-5284

Clouds and snowmelt on the North Slope of Alaska.

Zhang, T., Stamnes, K., Bowling, S.A., Atmospheric Radiation Measurement (ARM) Science Team Meeting, 5th, San Diego, CA, Mar. 19-23, 1995. Proceedings, Washington, D.C., U.S. Department of Energy. Environmental Sciences Division, Apr. 1996, p.373-376, 8 refs.

Polar atmospheres, Cloud physics, Cloud cover, Snow air interface, Snow heat flux, Snowmelt, Radiation balance, United States—Alaska—North Slope

50-5285

Some results of an experimental study of the atmospheric aerosol in Tomsk: a combined approach.

Zuev, V.V., Atmospheric Radiation Measurement (ARM) Science Team Meeting, 5th, San Diego, CA, Mar. 19-23, 1995. Proceedings, Washington, D.C., U.S. Department of Energy. Environmental Sciences Division, Apr. 1996, p.381-388.

Atmospheric circulation, Atmospheric composition, Aerosols, Air pollution, Haze, Russia—Tomsk

50-5286

Evidence of large scale ozone depletion within the arctic polar vortex 94/95 based on airborne lidar measurements.

Wirth, M., Renger, W., *Geophysical research letters*, Apr. 15, 1996, 23(8), p.813-816, 16 refs.

Polar atmospheres, Climatology, Air pollution, Polar stratospheric clouds, Aerial surveys, Atmospheric composition, Ozone, Lidar, Sounding, Cloud dissipation, Seasonal variations, Turbulent diffusion

50-5287

Dehydration of the upper troposphere and lower stratosphere by subvisible cirrus clouds near the tropical tropopause.

Jensen, E.J., Toon, O.B., Pfister, L., Selkirk, H.B., *Geophysical research letters*, Apr. 15, 1996, 23(8), p.825-828, 15 refs.

Clouds (meteorology), Climatology, Cloud physics, Gravity waves, Buoyancy, Stratosphere, Desiccation, Homogeneous nucleation, Ice crystal growth, Ice vapor interface, Sedimentation

50-5288

Potential atmospheric impact of the Toba mega-eruption ≈71,000 years ago.

Zielinski, G.A., Mayewski, P.A., Meeker, L.D., Whitlow, S., Twickler, M.S., Taylor, K., *Geophysical research letters*, Apr. 15, 1996, 23(8), p.837-840, 25 refs.

Paleoclimatology, Climatic changes, Atmospheric composition, Volcanic ash, Aerosols, Ice sheets, Sedimentation, Ice cores, Stratification, Ice dating, Geochronology, Cooling

50-5289

Measurements of upward turbulent ozone fluxes above a subalpine spruce-fir forest.

Zeller, K., Hehn, T., *Geophysical research letters*, Apr. 15, 1996, 23(8), p.841-844, 26 refs.

Forest ecosystems, Climatology, Atmospheric boundary layer, Atmospheric composition, Ozone, Vapor transfer, Advection, Turbulent diffusion, Snow cover effect, Snow air interface, Periodic variations, Snow composition

50-5290

$1.5 billion development plan set for BP's Alaskan Beaufort Sea fields. *Offshore*, June 1996, 56(6), p.34.

Petroleum industry, Offshore drilling, Economic development, Crude oil, Exploration, Underground pipelines, Beaufort Sea

50-5291

Nonlinear acoustic effects due to cracks in ice cover.

Ekimov, A.E., Lebedev, A.V., Ostrovskiĭ, L.A., Sutin, A.M., *Acoustical physics*, Jan.-Feb. 1996, 42(1), p.51-54, Translated from Akusticheskiĭ zhurnal. 12 refs.

Sea ice, Ice mechanics, Ice acoustics, Ice cracks, Acoustic measurement, Vibration, Oscillations, Sound waves, Wave propagation, Periodic variations, Spectra

50-5292

Multilingual vocabulary—snow and avalanches.

International Mountain Rescue Commission, Vanni Eigenmann International Foundation, 1991, 54p., Synonymous terminology in English, German, Italian, French and Slovenian.

Dictionaries, Terminology, Snow physics, Snow cover stability, Avalanche mechanics, Avalanche forecasting, Avalanche protection, Meteorological factors, Safety, Warning systems

50-5293

Tardigrada of the arctic tundra with descriptions of two new species.

Maucci, W., *Linnean Society of London. Zoological journal*, Jan.-Feb. 1996, 116(1-2), International Symposium on Tardigrada, 6th, Cambridge, UK, Aug. 1994, p.185-204, 37 refs.

Ecosystems, Tundra vegetation, Mosses, Lichens, Microbiology, Biomass, Sampling, Classifications, Stereoscopy, Distribution, Greenland, Norway—Spitsbergen, Iceland

50-5294

Tardigrades of the Taimyr peninsula with descriptions of two new species.

Biserov, V.I., *Linnean Society of London. Zoological journal*, Jan.-Feb. 1996, 116(1-2), International Symposium on Tardigrada, 6th, Cambridge, UK, Aug. 1994, p.215-237, 26 refs.

Microbiology, Limnology, Tundra vegetation, Biomass, Ecosystems, Sampling, Scanning electron microscopy, Structural analysis, Classifications, Mosses, Lichens, Russia—Taimyr Peninsula

50-5295

Seed rain, seedling establishment and clonal growth strategies on a glacier foreland.

Stöcklin, J., Bäumler, E., *Journal of vegetation science*, Feb. 1996, 7(1), p.45-56, 53 refs.

Plant ecology, Ecosystems, Revegetation, Glacier beds, Moraines, Vegetation patterns, Dispersions, Growth, Statistical analysis, Wind factors, Microclimatology, Phenology

50-5296

Sputtering of ices in the outer solar system.

Johnson, R.E., *Reviews of modern physics*, Jan. 1996, 68(1), p.305-312, 57 refs.

Extraterrestrial ice, Ice physics, Satellites (natural), Atmospheric composition, Ultraviolet radiation, Ionization, Ice erosion, Ice sublimation, Molecular energy levels

50-5297

Observation of slip transmission through a grain boundary in ice.

Jia, K., Baker, I., Liu, F., Dudley, M., *Journal of materials science*, May 1, 1996, 31(9), p.2373-2378, 12 refs.

Ice physics, X ray analysis, X ray diffraction, Imaging, Dynamic loads, Ice microstructure, Ice deformation, Ice plasticity, Orientation, Sliding, Defects, Topographic features

50-5298

Mechanism of action of antifreeze polypeptide HPLC6 in solution: analysis of solvent behaviour by molecular dynamics.

Brooke-Taylor, C.A., Grant, G.H., Elcock, A.H., Richards, W.G., *Chemical physics*, Apr. 1, 1996, 204(2-3), p.251-261, 35 refs.

Marine biology, Antifreezes, Solutions, Freezing points, Ice crystal growth, Adsorption, Ice water interface, Water structure, Molecular structure, Orientation, Molecular energy levels, Temperature effects, Computerized simulation

50-5299

Crack velocities in freshwater and saline ice.

Petrenko, V.F., Gluschenkov, O., *Journal of geophysical research*, May 10, 1996, 101(B5), p.11,541-11,551, 29 refs.

Ice physics, Sea ice, Lake ice, Ice cracks, Strain tests, Crack propagation, Velocity measurement, Ice microstructure, Ice dielectrics, Electric fields, Electrical resistivity, Electrical measurement, Temperature effects, Ice water interface, Unfrozen water content

50-5300

H_2O condensation coefficient and refractive index for vapor-deposited ice from molecular beam and optical interference measurements.

Brown, D.E., et al, *Journal of physical chemistry*, Mar. 21, 1996, 100(12), p.4988-4995, 53 refs.

Ice physics, Ice optics, Ice spectroscopy, Ice vapor interface, Ice density, Water vapor, Condensation, Refractivity, Indexes (ratios)

50-5301

Younger Dryas as viewed through the Summit Greenland ice cores.

Mayewski, P.A., *PAGES*, July 1994, 2(2), n.p., 11 refs.

Paleoclimatology, Ice sheets, Ice cores, Aerosols, Climatic changes, Ice composition, Chemical analysis, Correlation, Greenland—Summit

50-5302

Arctic systems: natural environments, human actions, nonlinear processes.

International Arctic Science Committee, International Conference for Arctic Research Planning, Hanover, NH, Dec. 5-9, 1995. Executive summary and International Arctic Science Committee. Report No.3, Oslo, 1995, 24p.

Meetings, Research projects, International cooperation, Global change, Oceanography, Climatology, Climatic changes, Ecosystems, Environmental protection, Geophysical surveys

50-5303

Downwelling radiation fluxes at the arctic surface based on parameterizations.

Silcox, R.A., Boulder, University of Colorado, 1994, 86p., Master's thesis. Refs. p.82-86.

Climatology, Marine atmospheres, Optical properties, Solar radiation, Radiation balance, Radiance, Albedo, Ice cover effect, Radiation absorption, Photometry, Seasonal variations, Classifications, Arctic Ocean

50-5304

Nordic permafrost—a bibliography.

Akerman, H.J., Sweden. Lund University. Department of Physical Geography. LUNGI, Rapporter och Notiser No.77, Lund, 1993, 17p.

Permafrost distribution, Permafrost physics, Maps, Bibliographies, Research projects

50-5305

Late Cenozoic history of the Scandinavian and Barents Sea ice sheets.

Mangerud, J., Jansen, E., Landvik, J.Y., *Global and planetary change*. Mar. 1996, 12(1-4), European program "Late Cenozoic Evolution of the Polar North Atlantic Margins" (PONAM), Fjærland, Norway, May 30-June 2, 1994. Workshop, selected papers, p.11-26, 59 refs.

Marine geology, Pleistocene, Glaciation, Ice sheets, Glacier oscillation, Paleoclimatology, Ice volume, Glacial erosion, Ice rafting, Sedimentation, Stratigraphy, Isotope analysis, Geochronology, Barents Sea

50-5306

Topographic control on the dynamics of the Svalbard-Barents Sea ice sheet.

Siegert, M.J., Dowdeswell, J.A., *Global and planetary change*, Mar. 1996, 12(1-4), European program "Late Cenozoic Evolution of the Polar North Atlantic Margins" (PONAM), Fjærland, Norway, May 30-June 2, 1994. Workshop, selected papers, p.27-39, 35 refs.

Pleistocene, Marine geology, Glacial geology, Ice sheets, Grounded ice, Glacier mass balance, Velocity, Ice solid interface, Sliding, Topographic effects, Bedrock, Mathematical models, Barents Sea

50-5307

Limits on the areal extent of the Barents Sea ice sheet in Late Weichselian time.

Lambeck, K., *Global and planetary change*, Mar. 1996, 12(1-4), European program "Late Cenozoic Evolution of the Polar North Atlantic Margins" (PONAM), Fjærland, Norway, May 30-June 2, 1994. Workshop, selected papers, p.41-51, 35 refs.

Pleistocene, Glacial geology, Marine geology, Isostasy, Sea level, Shoreline modification, Ice sheets, Grounded ice, Ice models, Mathematical models, Ice edge, Barents Sea

50-5308

Late Cenozoic evolution of the western Barents Sea-Svalbard continental margin.

Faleide, J.I., Solheim, A., Fiedler, A., Hjelstuen, B.O., Andersen, E.S., Vanneste, K., *Global and planetary change*, Mar. 1996, 12(1-4), European program "Late Cenozoic Evolution of the Polar North Atlantic Margins" (PONAM), Fjærland, Norway, May 30-June 2, 1994. Workshop, selected papers, p.53-74, 56 refs.

Pleistocene, Marine geology, Glacial geology, Glacial deposits, Glacial erosion, Sedimentation, Seismic reflection, Profiles, Stratigraphy, Correlation, Geochronology, Barents Sea

50-5309

Cenozoic sedimentation along the southwestern Barents Sea margin in relation to uplift and erosion of the shelf.

Fiedler, A., Faleide, J.I., *Global and planetary change*, Mar. 1996, 12(1-4), European program "Late Cenozoic Evolution of the Polar North Atlantic Margins" (PONAM), Fjærland, Norway, May 30-June 2, 1994. Workshop, selected papers, p.75-93, 62 refs.

Pleistocene, Glacial geology, Marine geology, Mass movements (geology), Glacial erosion, Bottom sediment, Sedimentation, Seismic reflection, Profiles, Stratigraphy, Geochronology, Barents Sea

50-5310

Cenozoic erosion and sediment yield in the drainage area of the Storfjorden Fan.

Hjelstuen, B.O., Elverhøi, A., Faleide, J.I., *Global and planetary change*, Mar. 1996, 12(1-4), European program "Late Cenozoic Evolution of the Polar North Atlantic Margins" (PONAM), Fjærland, Norway, May 30-June 2, 1994. Workshop, selected papers, p.95-117, 54 refs.

Pleistocene, Marine geology, Glacial geology, Glacial erosion, Glacial deposits, Marine deposits, Ice rafting, Sedimentation, Seismic reflection, Stratigraphy, Geochronology, Barents Sea

50-5311

Quantification of the Pliocene-Pleistocene erosion of the Barents Sea from present-day bathymetry.

Rasmussen, E., Fjeldskaar, W., *Global and planetary change*, Mar. 1996, 12(1-4), European program "Late Cenozoic Evolution of the Polar North Atlantic Margins" (PONAM), Fjærland, Norway, May 30-June 2, 1994. Workshop, selected papers, p.119-133, 29 refs.

Pleistocene, Marine geology, Glacial geology, Glacial erosion, Ocean bottom, Sediment transport, Isostasy, Tectonics, Bottom topography, Sounding, Models, Barents Sea

50-5312

Late Cenozoic depositional history of the western Svalbard continental shelf, controlled by subsidence and climate.

Solheim, A., Andersen, E.S., Elverhøi, A., Fiedler, A., *Global and planetary change*, Mar. 1996, 12(1-4), European program "Late Cenozoic Evolution of the Polar North Atlantic Margins" (PONAM), Fjærland, Norway, May 30-June 2, 1994. Workshop, selected papers, p.135-148, 56 refs.

Pleistocene, Marine geology, Marine deposits, Sedimentation, Paleoclimatology, Glacial geology, Glacial deposits, Glacial erosion, Glacier oscillation, Subsidence, Seismic reflection, Stratigraphy, Geochronology, Norway—Spitsbergen

50-5313

Cenozoic deposition in the Nansen Basin, a first-order estimate based on present-day bathymetry.

Vågnes, E., *Global and planetary change*, Mar. 1996, 12(1-4), European program "Late Cenozoic Evolution of the Polar North Atlantic Margins" (PONAM), Fjærland, Norway, May 30-June 2, 1994. Workshop, selected papers, p.149-157, 16 refs.

Pleistocene, Marine geology, Glacial deposits, Glacial erosion, Marine deposits, Deltas, Sounding, Sedimentation, Tectonics, Isostasy, Geochronology, Barents Sea

50-5314

Late Pliocene sand ridges at the western margin of the Barents Sea—do they monitor Late Pliocene glaciations?

Knutsen, S.M., Larsen, K.B., *Global and planetary change*, Mar. 1996, 12(1-4), European program "Late Cenozoic Evolution of the Polar North Atlantic Margins" (PONAM), Fjærland, Norway, May 30-June 2, 1994. Workshop, selected papers, p.159-169, 22 refs.

Pleistocene, Marine geology, Glacial geology, Glacial erosion, Glacial deposits, Marine deposits, Sedimentation, Drill core analysis, Seismic reflection, Profiles, Stratigraphy, Origin, Barents Sea

50-5315

Late Cenozoic sedimentation and uplift history on the mid-Norwegian continental shelf.

Henriksen, S., Vorren, T.O., *Global and planetary change*, Mar. 1996, 12(1-4), European program "Late Cenozoic Evolution of the Polar North Atlantic Margins" (PONAM), Fjærland, Norway, May 30-June 2, 1994. Workshop, selected papers, p.171-199, 48 refs.

Pleistocene, Marine geology, Glacial geology, Glacial deposits, Sedimentation, Tectonics, Profiles, Seismic reflection, Stratigraphy, Geochronology, Barents Sea

50-5316

Base Pliocene velocity inversion on the eastern Vøring Margin—causes and implications.

Reemst, P., Skogseid, J., Larsen, B.T., *Global and planetary change*, Mar. 1996, 12(1-4), European program "Late Cenozoic Evolution of the Polar North Atlantic Margins" (PONAM), Fjærland, Norway, May 30-June 2, 1994. Workshop, selected papers, p.201-211, 27 refs.

Pleistocene, Marine geology, Glacial geology, Sedimentation, Compaction, Wedges, Seismic velocity, Profiles, Tectonics, Ice shelves, Correlation, Barents Sea

50-5317

Rates of erosion and sediment evacuation by glaciers: a review of field data and their implications.

Hallet, B., Hunter, L., Bogen, J., MP 3834, *Global and planetary change*, Mar. 1996, 12(1-4), European program "Late Cenozoic Evolution of the Polar North Atlantic Margins" (PONAM), Fjærland, Norway, May 30-June 2, 1994. Workshop, selected papers, p.213-235, 41 refs.

Glacial geology, Geomorphology, Glacial erosion, Glacial deposits, Alpine glaciation, River basins, Sediment transport, Classifications

50-5318

Sediment flux from a fjord during glacial periods, Isfjorden, Spitsbergen.

Hooke, R. L., Elverhøi, A., *Global and planetary change*, Mar. 1996, 12(1-4), European program "Late Cenozoic Evolution of the Polar North Atlantic Margins" (PONAM), Fjærland, Norway, May 30-June 2, 1994. Workshop, selected papers, p.237-249, 35 refs.

Pleistocene, Marine geology, Glacial geology, Bottom sediment, Deltas, Glacial erosion, Glacial deposits, Sediment transport, Mathematical models, Barents Sea, Norway—Spitsbergen

50-5319

Sediment deposition in an iceberg-dominated glacimarine environment, East Greenland: basin fill implications.

Syvitski, J.P.M., Andrews, J.T., Dowdeswell, J.A., *Global and planetary change*, Mar. 1996, 12(1-4), European program "Late Cenozoic Evolution of the Polar North Atlantic Margins" (PONAM), Fjærland, Norway, May 30-June 2, 1994. Workshop, selected papers, p.251-270, 56 refs.

Marine geology, Glacial hydrology, Bottom sediment, Sedimentation, Turbidity, Ice shelves, Calving, Ice rafting, Meltwater, Greenland

50-5320

Soil investigation, offshore mid Norway: a case study of glacial influence on geotechnical properties.

Sættem, J., Rise, L., Rokoengen, K., By, T., *Global and planetary change*, Mar. 1996, 12(1-4), European program "Late Cenozoic Evolution of the Polar North Atlantic Margins" (PONAM), Fjærland, Norway, May 30-June 2, 1994. Workshop, selected papers, p.271-285, 46 refs.

Pleistocene, Marine geology, Glacial geology, Bottom sediment, Glacial deposits, Grounded ice, Ice solid interface, Shear strength, Soil compaction, Ice cover effect, Rheology, Thermal stresses, Mathematical models, Barents Sea

50-5321

Mass movements in glaciomarine sediments on the Barents Sea continental slope.

Kuvaas, B., *Global and planetary change*, Mar. 1996, 12(1-4), European program "Late Cenozoic Evolution of the Polar North Atlantic Margins" (PONAM), Fjærland, Norway, May 30-June 2, 1994. Workshop, selected papers, p.287-307, 53 refs.

Pleistocene, Marine geology, Marine deposits, Ocean bottom, Geomorphology, Mass movements (geology), Glacial geology, Glacial erosion, Wedges, Seismic reflection, Profiles, Stratigraphy, Barents Sea

50-5322

Middle and Late Pleistocene evolution of the Bear Island Trough Mouth Fan.

Laberg, J.S., Vorren, T.O., *Global and planetary change*, Mar. 1996, 12(1-4), European program "Late Cenozoic Evolution of the Polar North Atlantic Margins" (PONAM), Fjærland, Norway, May 30-June 2, 1994. Workshop, selected papers, p.309-330, 62 refs.

Pleistocene, Marine geology, Glacial geology, Glacial erosion, Ice rafting, Meltwater, Turbidity, Deltas, Sedimentation, Seismic reflection, Profiles, Stratigraphy, Sounding, Barents Sea

50-5323

Quantification of Cenozoic vertical movements of Scandinavia by correlation of morphological surfaces with offshore data.

Riis, F., *Global and planetary change.* Mar. 1996, 12(1-4), European program "Late Cenozoic Evolution of the Polar North Atlantic Margins" (PONAM), Fjærland, Norway, May 30-June 2, 1994. Workshop, selected papers, p.331-357, 58 refs.

Pleistocene, Tectonics, Geomorphology, Marine geology, Glacial geology, Glacial erosion, Ocean bottom, Seismic reflection, Profiles, Norway

50-5324

Cenozoic uplift of Fennoscandia inferred from a study of the mid-Norwegian margin.

Stuevold, L.M., Eldholm, O., *Global and planetary change,* Mar. 1996, 12(1-4), European program "Late Cenozoic Evolution of the Polar North Atlantic Margins" (PONAM), Fjærland, Norway, May 30-June 2, 1994. Workshop, selected papers, p.359-386, Refs. p.382-386.

Pleistocene, Tectonics, Geomorphology, Glacial geology, Marine geology, Marine deposits, Wedges, Seismic reflection, Stratigraphy, Isostasy, Earth crust, Geochronology, Norway

50-5325

Possible consequences of glacially induced groundwater flow.

Forsberg, C.F., *Global and planetary change,* Mar. 1996, 12(1-4), European program "Late Cenozoic Evolution of the Polar North Atlantic Margins" (PONAM), Fjærland, Norway, May 30-June 2, 1994. Workshop, selected papers, p.387-396, 22 refs.

Pleistocene, Marine geology, Ocean bottom, Ground water, Water transport, Grounded ice, Glacial hydrology, Subglacial drainage, Ice solid interface, Ice cover effect, Hydrocarbons, Permeability, Profiles, Fluid dynamics, Barents Sea

50-5326

Impact of glaciation on the groundwater regime of northwest Europe.

Boulton, G.S., Caban, P.E., van Gijssel, K., Leijnse, A., Punkari, M., Van Weert, F.H.A., *Global and planetary change,* Mar. 1996, 12(1-4), European program "Late Cenozoic Evolution of the Polar North Atlantic Margins" (PONAM), Fjærland, Norway, May 30-June 2, 1994. Workshop, selected papers, p.397-413, 27 refs.

Pleistocene, Glaciation, Hydrogeology, Permafrost transformation, Subglacial drainage, Glacial hydrology, Meltwater, Ground water, Water table, Upwelling, Ice cover effect, Permeability, Mathematical models

50-5327

Impact of late Cenozoic uplift and erosion on hydrocarbon exploration: offshore Norway and some other uplifted basins.

Doré, A.G., Jensen, L.N., *Global and planetary change.* Mar. 1996, 12(1-4), European program "Late Cenozoic Evolution of the Polar North Atlantic Margins" (PONAM), Fjærland, Norway, May 30-June 2, 1994. Workshop, selected papers, p.415-436, 58 refs.

Pleistocene, Marine geology, Tectonics, Hydrocarbons, Reservoirs, Permeability, Rock mechanics, Erosion, Geochemistry, Exploration, Barents Sea

50-5328

Influence of glaciation on the basin temperature regime.

Johansen, H., Fjeldskaar, W., Mykkeltveit, J., *Global and planetary change,* Mar. 1996, 12(1-4), European program "Late Cenozoic Evolution of the Polar North Atlantic Margins" (PONAM), Fjærland, Norway, May 30-June 2, 1994. Workshop, selected papers, p.437-448, 22 refs.

Pleistocene, Marine geology, Glacial geology, Glaciation, Sediments, Soil temperature, Subglacial observations, Ice solid interface, Ice cover effect, Thermal conductivity, Frozen ground thermodynamics, Temperature variations, Models

50-5329

Proceedings. IWAIS '96.

International Workshop on Atmospheric Icing of Structures, 7th, Chicoutimi, Quebec, June 3-7, 1996, Farzaneh, M., ed, Laflamme, J.N., ed, Chicoutimi, Université du Québec, 1996, 475p., Refs. passim. Title page in English and French. For individual papers see 50-5330 through 50-5407. Abstracts without papers are included on p.451-470.

Power line icing, Ice accretion, Ice loads, Ice storms, Ice forecasting, Snow loads, Wind pressure

50-5330

Ice storm data base and ice severity map.

Shan, L., Marr, L., McCafferty, R.M., International Workshop on Atmospheric Icing of Structures, 7th, Chicoutimi, Quebec, June 3-7, 1996. Proceedings. IWAIS '96. Edited by M. Farzaneh and J. Laflamme, Chicoutimi, Université du Québec, 1996, p.3-7, 3 refs.

Power line icing, Ice loads, Ice storms, Ice forecasting, Weather forecasting, Data processing

50-5331

National climatic reference base for exceptional wet snow and rime ice episodes.

Raison, T., Albertin, J.C., Admirat, P., International Workshop on Atmospheric Icing of Structures, 7th, Chicoutimi, Quebec, June 3-7, 1996. Proceedings. IWAIS '96. Edited by M. Farzaneh and J. Laflamme, Chicoutimi, Université du Québec, 1996, p.8-14, 4 refs.

Power line icing, Ice accretion, Ice loads, Ice forecasting, Ice storms, Snowstorms, Wet snow, Snow loads, Weather forecasting, Data processing, France

50-5332

Romanian experience in meteorological zoning for designing of overhead lines (OLs).

Goia, L.M., International Workshop on Atmospheric Icing of Structures. 7th, Chicoutimi, Quebec, June 3-7, 1996. Proceedings. IWAIS '96. Edited by M. Farzaneh and J. Laflamme, Chicoutimi, Université du Québec, 1996, p.15-18, 4 refs.

Power line icing, Ice accretion, Ice loads, Ice forecasting, Wind pressure, Design criteria, Romania

50-5333

Climate of freezing rain over the province of Québec in Canada: a preliminary analysis.

Laflamme, J.N., Périard, G., International Workshop on Atmospheric Icing of Structures, 7th, Chicoutimi, Quebec, June 3-7, 1996. Proceedings. IWAIS '96. Edited by M. Farzaneh and J. Laflamme, Chicoutimi, Université du Québec, 1996, p.19-24, 5 refs.

Power line icing, Ice storms, Ice accretion, Ice loads, Ice detection, Ice forecasting, Thickness gages, Meteorological data, Design criteria, Canada—Quebec

50-5334

Freezing-rain reporting capability of the Automated Surface Observing System (ASOS).

Ramsay, A.C., International Workshop on Atmospheric Icing of Structures, 7th, Chicoutimi, Quebec, June 3-7, 1996. Proceedings. IWAIS '96. Edited by M. Farzaneh and J. Laflamme, Chicoutimi, Université du Québec, 1996, p.25-29, 4 refs.

Aircraft icing, Ice storms, Ice forecasting, Ice accretion, Ice detection, Weather forecasting, Warning systems, United States

50-5335

Freshwater spongy spray icing model with surficial structure.

Blackmore, R.Z., Lozowski, E.P., International Workshop on Atmospheric Icing of Structures, 7th, Chicoutimi, Quebec, June 3-7, 1996. Proceedings. IWAIS '96. Edited by M. Farzaneh and J. Laflamme, Chicoutimi, Université du Québec, 1996, p.33-38, 13 refs.

Spray freezing, Spongy ice, Ice accretion, Ice growth, Ice crystal growth, Water films, Mathematical models

50-5336

Numerical study of iced conductors aerodynamics.

Ilinca, A., Ilinca, F., Ignat, L., International Workshop on Atmospheric Icing of Structures, 7th, Chicoutimi, Quebec, June 3-7, 1996. Proceedings. IWAIS '96. Edited by M. Farzaneh and J. Laflamme, Chicoutimi, Université du Québec, 1996, p.39-43, 20 refs.

Power line icing, Glaze, Ice accretion, Ice loads, Ice forecasting, Wind pressure, Air flow, Vibration, Mathematical models

50-5337

Weight-dropping simulation of ice-shedding effects on an overhead transmission line model.

Jamaleddine, A., Beauchemin, R., Rousselet, J., McClure, G., International Workshop on Atmospheric Icing of Structures, 7th, Chicoutimi, Quebec, June 3-7, 1996. Proceedings. IWAIS '96. Edited by M. Farzaneh and J. Laflamme, Chicoutimi, Université du Québec, 1996, p.44-48, 10 refs.

Power line icing, Ice accretion, Ice loads, Ice removal, Wind pressure, Environmental tests, Mechanical tests

50-5338

Numerical modelling of the dynamic response of ice shedding on electrical transmission lines.

Fekr, M.R., McClure, G., International Workshop on Atmospheric Icing of Structures, 7th, Chicoutimi, Quebec, June 3-7, 1996. Proceedings. IWAIS '96. Edited by M. Farzaneh and J. Laflamme, Chicoutimi, Université du Québec, 1996, p.49-54, 9 refs.

Power line icing, Ice accretion, Ice loads, Ice removal, Tensile properties, Computerized simulation

50-5339

Microstructure and mechanical properties of some small impact ice accretions.

Hammond, D.W., International Workshop on Atmospheric Icing of Structures, 7th, Chicoutimi, Quebec, June 3-7, 1996. Proceedings. IWAIS '96. Edited by M. Farzaneh and J. Laflamme, Chicoutimi, Université du Québec, 1996, p.55-59, 2 refs.

Aircraft icing, Ice accretion, Ice adhesion, Ice strength, Ice microstructure, Ice breaking, Ice removal, Wind tunnels

50-5340

Three-dimensional modelling of ice accretion micro structure.

Szilder, K., Lozowski, E.P., International Workshop on Atmospheric Icing of Structures, 7th, Chicoutimi, Quebec, June 3-7, 1996. Proceedings. IWAIS '96. Edited by M. Farzaneh and J. Laflamme, Chicoutimi, Université du Québec, 1996, p.60-63, 10 refs.

Ice accretion, Ice adhesion, Ice microstructure, Ice density, Cloud droplets, Computerized simulation

50-5341

Artificial ice tests for long insulator strings.

Wu, D., Halsan, K.Å., Fikke, S.M., International Workshop on Atmospheric Icing of Structures, 7th, Chicoutimi, Quebec, June 3-7, 1996. Proceedings. IWAIS '96. Edited by M. Farzaneh and J. Laflamme, Chicoutimi, Université du Québec, 1996, p.67-71, 15 refs.

Power line icing, Ice accretion, Ice loads, Ice electrical properties, Electric corona, Electrical insulation, Environmental tests

50-5342

Insulators in icing conditions: selection and measures for reliability increasing.

Sklenička, V., Vokálek, J., International Workshop on Atmospheric Icing of Structures, 7th, Chicoutimi, Quebec, June 3-7, 1996. Proceedings. IWAIS '96. Edited by M. Farzaneh and J. Laflamme, Chicoutimi, Université du Québec, 1996, p.72-76, 4 refs.

Power line icing, Ice accretion, Ice loads, Icicles, Ice electrical properties, Electrical insulation, Electric corona

50-5343
Factors influencing flashover characteristics along ice surfaces.
Chen, X., Farzaneh, M., Zhang, J., International Workshop on Atmospheric Icing of Structures, 7th, Chicoutimi, Quebec, June 3-7, 1996. Proceedings. IWAIS '96. Edited by M. Farzaneh and J. Laflamme, Chicoutimi, Université du Québec, 1996, p.77-81, 5 refs.
Power line icing, Ice accretion, Ice loads, Ice electrical properties, Electrical insulation, Electric corona

50-5344
DC characteristics of local arc on ice surfaces.
Farzaneh, M., Zhang, J., Chen, X., International Workshop on Atmospheric Icing of Structures, 7th, Chicoutimi, Quebec, June 3-7, 1996. Proceedings. IWAIS '96. Edited by M. Farzaneh and J. Laflamme, Chicoutimi, Université du Québec, 1996, p.82-86, 14 refs.
Power line icing, Ice accretion, Ice loads, Ice electrical properties, Electrical insulation, Electric corona

50-5345
Study of minimum flashover voltage of iced-covered suspension insulators.
Shu, L.C., Gu, L.G., Sun, C.X., International Workshop on Atmospheric Icing of Structures, 7th, Chicoutimi, Quebec, June 3-7, 1996. Proceedings. IWAIS '96. Edited by M. Farzaneh and J. Laflamme, Chicoutimi, Université du Québec, 1996, p.87-92, 4 refs.
Power line icing, Ice accretion, Ice loads, Ice electrical properties, Electrical insulation, Electric corona

50-5346
Measurements of ice and snow loads on the Tyee Lake 138 kV line.
Peabody, A.B., International Workshop on Atmospheric Icing of Structures, 7th, Chicoutimi, Quebec, June 3-7, 1996. Proceedings. IWAIS '96. Edited by M. Farzaneh and J. Laflamme, Chicoutimi, Université du Québec, 1996, p.95-100, 7 refs.
Power line icing, Ice accretion, Ice loads, Snow loads, Snowstorms, Ice storms, Weather stations, Meteorological instruments, United States—Alaska—Petersburg

50-5347
IEC TC11 WG11—report on meteorological data for assessing climatic loads.
Ervik, M., Fikke, S.M., International Workshop on Atmospheric Icing of Structures, 7th, Chicoutimi, Quebec, June 3-7, 1996. Proceedings. IWAIS '96. Edited by M. Farzaneh and J. Laflamme, Chicoutimi, Université du Québec, 1996, p.101-106, 2 refs.
Power line icing, Ice accretion, Ice loads, Design criteria, Meteorological data, Data processing

50-5348
Field comparison and wind tunnel calibration of two heated anemometers.
Makkonen, L., Lehtonen, P., International Workshop on Atmospheric Icing of Structures, 7th, Chicoutimi, Quebec, June 3-7, 1996. Proceedings. IWAIS '96. Edited by M. Farzaneh and J. Laflamme, Chicoutimi, Université du Québec, 1996, p.107-110, 9 refs.
Anemometers, Antennas, Towers, Wind pressure, Ice storms, Ice loads, Ice accretion, Ice forecasting, Warning systems

50-5349
Monitoring the effects of wind, snow and ice on optical fibre wraps and other attachments to overhead line conductors.
Wareing, J.B., International Workshop on Atmospheric Icing of Structures, 7th, Chicoutimi, Quebec, June 3-7, 1996. Proceedings. IWAIS '96. Edited by M. Farzaneh and J. Laflamme, Chicoutimi, Université du Québec, 1996, p.111-115, 1 ref.
Power line icing, Ice accretion, Ice loads, Snow loads, Wind pressure

50-5350
Combined wind and ice loads from historical extreme wind and ice data.
Krishnasamy, S., Kulendran, S., International Workshop on Atmospheric Icing of Structures, 7th, Chicoutimi, Quebec, June 3-7, 1996. Proceedings. IWAIS '96. Edited by M. Farzaneh and J. Laflamme, Chicoutimi, Université du Québec, 1996, p.119-124, 5 refs.
Ice storms, Ice accretion, Ice loads, Wind pressure, Weather stations, Meteorological data, Design criteria, Canada—Ontario

50-5351
Estimation of ice accretion weight from field data obtained on overhead transmission line cables.
Savadjiev, K., Latour, A., Paradis, A., International Workshop on Atmospheric Icing of Structures, 7th, Chicoutimi, Quebec, June 3-7, 1996. Proceedings. IWAIS '96. Edited by M. Farzaneh and J. Laflamme, Chicoutimi, Université du Québec, 1996, p.125-130, 7 refs.
Power line icing, Ice accretion, Ice loads, Ice storms, Meteorological data, Statistical analysis, Canada—Quebec

50-5352
Wet snow icing combined with strong wind—field inspections and field measurements.
Eliasson, Á.J., Thorsteins, E., International Workshop on Atmospheric Icing of Structures, 7th, Chicoutimi, Quebec, June 3-7, 1996. Proceedings. IWAIS '96. Edited by M. Farzaneh and J. Laflamme, Chicoutimi, Université du Québec, 1996, p.131-136, 11 refs.
Power line icing, Ice storms, Snowstorms, Ice accretion, Ice loads, Wet snow, Snow loads, Wind pressure, Iceland

50-5353
Estimation of combined wind and ice loads on telecommunication towers in Québec. Phase I: modeling of the ice and wind observations.
Elfashny, K., Chouinard, L.E., Laflamme, J.N., International Workshop on Atmospheric Icing of Structures, 7th, Chicoutimi, Quebec, June 3-7, 1996. Proceedings. IWAIS '96. Edited by M. Farzaneh and J. Laflamme, Chicoutimi, Université du Québec, 1996, p.137-141, 10 refs.
Antennas, Towers, Ice storms, Ice accretion, Ice loads, Wind pressure, Weather stations, Meteorological data, Statistical analysis, Canada—Quebec

50-5354
Ice risk levels—a practical approach to design.
Støttrup-Andersen, U., International Workshop on Atmospheric Icing of Structures, 7th, Chicoutimi, Quebec, June 3-7, 1996. Proceedings. IWAIS '96. Edited by M. Farzaneh and J. Laflamme, Chicoutimi, Université du Québec, 1996, p.142-145.
Ice accretion, Glaze, Ice loads, Wind pressure, Standards, Design criteria

50-5355
Application of disaster warning system due to snow accretion on power lines using neural networks.
Ohta, H., Saitoh, K., Kanemaru, K., Ijichi, Y., Kitagawa, H., Konno, T., International Workshop on Atmospheric Icing of Structures, 7th, Chicoutimi, Quebec, June 3-7, 1996. Proceedings. IWAIS '96. Edited by M. Farzaneh and J. Laflamme, Chicoutimi, Université du Québec, 1996, p.149-154, 6 refs.
Power line icing, Snowstorms, Snow loads, Weather forecasting, Warning systems, Data transmission, Neural networks, Japan

50-5356
Transmission line ice measurements with tension monitoring systems.
Seppa, T.O., International Workshop on Atmospheric Icing of Structures, 7th, Chicoutimi, Quebec, June 3-7, 1996. Proceedings. IWAIS '96. Edited by M. Farzaneh and J. Laflamme, Chicoutimi, Université du Québec, 1996, p.155-158, 4 refs.
Power line icing, Ice accretion, Ice loads, Ice detection, Tensile properties, Monitors

50-5357
Icing rate meter, an instrument to evaluate transmission line icing.
McComber, P., Latour, A., Druez, J., Laflamme, J.N., International Workshop on Atmospheric Icing of Structures, 7th, Chicoutimi, Quebec, June 3-7, 1996. Proceedings. IWAIS '96. Edited by M. Farzaneh and J. Laflamme, Chicoutimi, Université du Québec, 1996, p.159-168, 11 refs.
Power line icing, Ice accretion, Ice loads, Icing rate, Ice detection, Strain measuring instruments

50-5358
Telemonitoring of climatic loads on Hydro-Québec 735 kV lines.
Hardy, C., Brunelle, J., Chevalier, J., Manoukian, B., Vilandré, R., International Workshop on Atmospheric Icing of Structures, 7th, Chicoutimi, Quebec, June 3-7, 1996. Proceedings. IWAIS '96. Edited by M. Farzaneh and J. Laflamme, Chicoutimi, Université du Québec, 1996, p.169-174, 1 ref.
Power line icing, Ice accretion, Ice loads, Ice detection, Wind pressure, Monitors, Data transmission, Telemetering equipment, Canada—Quebec

50-5359
Icing rate measurements: a key way of estimating ice loads on structures.
Laflamme, J.N., International Workshop on Atmospheric Icing of Structures, 7th, Chicoutimi, Quebec, June 3-7, 1996. Proceedings. IWAIS '96. Edited by M. Farzaneh and J. Laflamme, Chicoutimi, Université du Québec, 1996, p.175-180, 15 refs.
Ice accretion, Ice loads, Ice detection, Icing rate, Strain measuring instruments

50-5360
Methods to estimate ice accumulations on surface structures.
Schaub, W.R., Jr., International Workshop on Atmospheric Icing of Structures, 7th, Chicoutimi, Quebec, June 3-7, 1996. Proceedings. IWAIS '96. Edited by M. Farzaneh and J. Laflamme, Chicoutimi, Université du Québec, 1996, p.183-188, 21 refs.
Ice accretion, Ice loads, Ice storms, Ice forecasting, Icing rate, Glaze, Wind pressure, Design criteria

50-5361
Validation of ice accretion models for freezing precipitation using field data.
Haldar, A., et al, International Workshop on Atmospheric Icing of Structures, 7th, Chicoutimi, Quebec, June 3-7, 1996. Proceedings. IWAIS '96. Edited by M. Farzaneh and J. Laflamme, Chicoutimi, Université du Québec, 1996, p.189-194, 4 refs.
Power line icing, Ice storms, Ice accretion, Ice loads, Ice detection, Ice forecasting, Wind pressure, Weather stations, Weather observations

50-5362
Modeling power line icing in freezing precipitation.
Makkonen, L., International Workshop on Atmospheric Icing of Structures, 7th, Chicoutimi, Quebec, June 3-7, 1996. Proceedings. IWAIS '96. Edited by M. Farzaneh and J. Laflamme, Chicoutimi, Université du Québec, 1996, p.195-200, 30 refs.
Power line icing, Ice storms, Ice accretion, Glaze, Ice loads, Ice forecasting, Wind pressure, Design criteria, Mathematical models

50-5363
Procedure for estimating ice load on overhead wires based on short term observations.
Sakamoto, Y., Miura, A., International Workshop on Atmospheric Icing of Structures, 7th, Chicoutimi, Quebec, June 3-7, 1996. Proceedings. IWAIS '96. Edited by M. Farzaneh and J. Laflamme, Chicoutimi, Université du Québec, 1996, p.201-204, 10 refs.
Power line icing, Ice accretion, Ice loads, Ice forecasting, Statistical analysis

50-5364

Atmospheric icing on transmission line towers in Iran.

Arabani, M.P., Ashtiani, H.E., Dragan, G., International Workshop on Atmospheric Icing of Structures, 7th, Chicoutimi, Quebec, June 3-7, 1996. Proceedings. IWAIS '96. Edited by M. Farzaneh and J. Laflamme, Chicoutimi, Université du Québec, 1996, p.207-209, 4 refs.

Power line supports, Towers, Power line icing, Ice loads, Design criteria, Iran

50-5365

Failures of overhead lines due to ice and wet snow in a part of Balkan Peninsula (Serbia).

Vučković, Z., Plazinić, S., Nikolić, I., International Workshop on Atmospheric Icing of Structures, 7th, Chicoutimi, Quebec, June 3-7, 1996. Proceedings. IWAIS '96. Edited by M. Farzaneh and J. Laflamme, Chicoutimi, Université du Québec, 1996, p.210-215, 5 refs.

Power line icing, Ice accretion, Ice loads, Ice forecasting, Wet snow, Snow loads, Accidents, Meteorological data, Design criteria, Statistical analysis, Serbia

50-5366

Romanian experience regarding operational behavior of HV OLs.

Goia, L.M., Balan, G., International Workshop on Atmospheric Icing of Structures, 7th, Chicoutimi, Quebec, June 3-7, 1996. Proceedings. IWAIS '96. Edited by M. Farzaneh and J. Laflamme, Chicoutimi, Université du Québec, 1996, p.216-221, 2 refs.

Power line icing, Ice accretion, Ice loads, Snow loads, Ice storms, Snowstorms, Wind pressure, Accidents, Statistical analysis, Romania

50-5367

Ice storm management on an electrical utility system.

Hall, J.W., International Workshop on Atmospheric Icing of Structures, 7th, Chicoutimi, Quebec, June 3-7, 1996. Proceedings. IWAIS '96. Edited by M. Farzaneh and J. Laflamme, Chicoutimi, Université du Québec, 1996, p.225-230, 4 refs.

Power line icing, Ice storms, Ice accretion, Ice loads, Ice melting, Artificial melting, Ice removal, Accidents, Cost analysis, Canada—Manitoba

50-5368

Transmission line icing mechanism and study of new de-icing techniques.

Jiang, X.L., Bai, Y.C., Ma, Y.H., International Workshop on Atmospheric Icing of Structures, 7th, Chicoutimi, Quebec, June 3-7, 1996. Proceedings. IWAIS '96. Edited by M. Farzaneh and J. Laflamme, Chicoutimi, Université du Québec, 1996, p.231-236, 5 refs.

Power line icing, Ice accretion, Ice loads, Glaze, Ice melting, Artificial melting, Ice removal

50-5369

State-of-the-art on power line de-icing.

Laforte, J.L., Allaire, M.A., Laflamme, J.N., International Workshop on Atmospheric Icing of Structures, 7th, Chicoutimi, Quebec, June 3-7, 1996. Proceedings. IWAIS '96. Edited by M. Farzaneh and J. Laflamme, Chicoutimi, Université du Québec, 1996, p.237-244, 6 refs.

Power line icing, Ice control, Ice prevention, Ice removal

50-5370

Modelled and observed operation of a passive melting technology for photovoltaic arrays.

Ross, M.M.D., Usher, E.P., International Workshop on Atmospheric Icing of Structures, 7th, Chicoutimi, Quebec, June 3-7, 1996. Proceedings. IWAIS '96. Edited by M. Farzaneh and J. Laflamme, Chicoutimi, Université du Québec, 1996, p.245-250, 11 refs.

Ice accretion, Artificial melting, Ice removal, Snow removal, Electric power, Solar radiation

50-5371

Study of countermeasures against snow accretion and conductor galloping on overhead transmission lines.

Ozawa, A., Kagami, J., Ando, H., Oka, T., Nakada, M., International Workshop on Atmospheric Icing of Structures, 7th, Chicoutimi, Quebec, June 3-7, 1996. Proceedings. IWAIS '96. Edited by M. Farzaneh and J. Laflamme, Chicoutimi, Université du Québec, 1996, p.251-256, 2 refs.

Power line icing, Ice accretion, Wet snow, Snow loads, Wind pressure, Vibration, Damping

50-5372

February 1994 ice storm in the southeastern U.S.

Lott, J.N., Sittel, M.C., International Workshop on Atmospheric Icing of Structures, 7th, Chicoutimi, Quebec, June 3-7, 1996. Proceedings. IWAIS '96. Edited by M. Farzaneh and J. Laflamme, Chicoutimi, Université du Québec, 1996, p.259-264.

Ice storms, Fronts (meteorology), Ice accretion, Ice loads, Accidents, Cost analysis, United States

50-5373

Surface weather features associated with freezing precipitation and in-flight aircraft icing.

Bernstein, B.C., Politovich, M.K., Omeron, T.A., McDonough, F., International Workshop on Atmospheric Icing of Structures, 7th, Chicoutimi, Quebec, June 3-7, 1996. Proceedings. IWAIS '96. Edited by M. Farzaneh and J. Laflamme, Chicoutimi, Université du Québec, 1996, p.265-270, 9 refs.

Aircraft icing, Ice storms, Snow pellets, Ice forecasting, Precipitation (meteorology), Fronts (meteorology), Air masses, Weather observations, Weather forecasting

50-5374

Potential icing forecast compared with NOAA-14 images.

Fuchs, W., Schickel, K.P., International Workshop on Atmospheric Icing of Structures, 7th, Chicoutimi, Quebec, June 3-7, 1996. Proceedings. IWAIS '96. Edited by M. Farzaneh and J. Laflamme, Chicoutimi, Université du Québec, 1996, p.271-276, 5 refs.

Aircraft icing, Ice accretion, Ice storms, Ice forecasting, Supercooled clouds, Spaceborne photography

50-5375

Atmospheric ice ablation processes on Mt. Equinox, Vermont, U.S.A.

Ryerson, C.C., Kenyon, P., MP 3826, International Workshop on Atmospheric Icing of Structures, 7th, Chicoutimi, Quebec, June 3-7, 1996. Proceedings. IWAIS '96. Edited by M. Farzaneh and J. Laflamme, Chicoutimi, Université du Québec, 1996, p.277-281, 13 refs.

Ice accretion, Ice adhesion, Glaze, Ice air interface, Ablation, Ice sublimation, Ice melting, Ice breaking, Ice removal, Wind factors, United States—Vermont

The purpose of this study is to determine the meteorological conditions associated with natural ablation of atmospheric ice. Atmospheric icing events were recorded by time-lapse video for portions of two winters at an elevation of 1006 m on Mt. Equinox, VT, U.S.A. Seventy-seven ablation periods were identified and compiled. Synoptic weather patterns, air temperature, humidity, wind direction and wind speed are related to ablation events observed on the video.

50-5376

Analyses of conductor ice accretion and meteorological characteristics.

Luo, N., Wen, J.F., Zhao, C., Tang, L., Huang, W.G., International Workshop on Atmospheric Icing of Structures, 7th, Chicoutimi, Quebec, June 3-7, 1996. Proceedings. IWAIS '96. Edited by M. Farzaneh and J. Laflamme, Chicoutimi, Université du Québec, 1996, p.282-287, 8 refs.

Power line icing, Ice accretion, Ice loads, Ice storms, Ice forecasting, Supercooled clouds

50-5377

Galloping of iced electrical transmission lines.

Popplewell, N., Shah, A.H., Yu, P., Desai, Y., Stumpf, P., International Workshop on Atmospheric Icing of Structures, 7th, Chicoutimi, Quebec, June 3-7, 1996. Proceedings. IWAIS '96. Edited by M. Farzaneh and J. Laflamme, Chicoutimi, Université du Québec, 1996, p.291-294, 14 refs.

Power line icing, Ice storms, Ice accretion, Ice loads, Wind pressure, Vibration, Damping

50-5378

Effect of icing on the dynamic behaviour of guyed antenna towers.

Wahba, Y.M.F., Madugula, M.K.S., Monforton, G.R., International Workshop on Atmospheric Icing of Structures, 7th, Chicoutimi, Quebec, June 3-7, 1996. Proceedings. IWAIS '96. Edited by M. Farzaneh and J. Laflamme, Chicoutimi, Université du Québec, 1996, p.295-299, 5 refs.

Antennas, Towers, Cables (ropes), Ice accretion, Ice loads, Wind pressure, Vibration

50-5379

Observations of galloping on overhead transmission test lines with artificial snow accretion models.

Ozawa, A., Kagami, J., Takeda, K., Oka, T., International Workshop on Atmospheric Icing of Structures, 7th, Chicoutimi, Quebec, June 3-7, 1996. Proceedings. IWAIS '96. Edited by M. Farzaneh and J. Laflamme, Chicoutimi, Université du Québec, 1996, p.300-305, 1 ref.

Power line icing, Ice accretion, Ice loads, Artificial snow, Snow loads, Wind pressure, Vibration, Environmental tests

50-5380

Galloping events and associated meteorological condition experienced in Hokuriku area.

Kasima, H., Nishimura, Y., Sakamoto, Y., International Workshop on Atmospheric Icing of Structures, 7th, Chicoutimi, Quebec, June 3-7, 1996. Proceedings. IWAIS '96. Edited by M. Farzaneh and J. Laflamme, Chicoutimi, Université du Québec, 1996, p.306-311, 5 refs.

Power line icing, Ice accretion, Ice loads, Wet snow, Snow loads, Wind pressure, Vibration, Electric corona, Japan

50-5381

Cable galloping model for thin ice accretions.

McComber, P., Paradis, A., International Workshop on Atmospheric Icing of Structures, 7th, Chicoutimi, Quebec, June 3-7, 1996. Proceedings. IWAIS '96. Edited by M. Farzaneh and J. Laflamme, Chicoutimi, Université du Québec, 1996, p.312-317, 9 refs.

Power line icing, Ice storms, Ice accretion, Ice loads, Ice forecasting, Wind pressure, Vibration, Damping, Mathematical models

50-5382

Fifteen years field trials of galloping controls for overhead power lines.

Havard, D.G., International Workshop on Atmospheric Icing of Structures, 7th, Chicoutimi, Quebec, June 3-7, 1996. Proceedings. IWAIS '96. Edited by M. Farzaneh and J. Laflamme, Chicoutimi, Université du Québec, 1996, p.318-323, 17 refs.

Power line icing, Ice accretion, Glaze, Ice loads, Snow loads, Wind pressure, Vibration, Damping, Design criteria, Statistical analysis

50-5383

AC breakdown process of snow sample simulating capped snow on insulator strings.

Higashiyama, Y., Asano, K., Josho, M., Tachizaki, S., International Workshop on Atmospheric Icing of Structures, 7th, Chicoutimi, Quebec, June 3-7, 1996. Proceedings. IWAIS '96. Edited by M. Farzaneh and J. Laflamme, Chicoutimi, Université du Québec, 1996, p.327-332, 5 refs.

Power line icing, Snow loads, Snow composition, Snow electrical properties, Snowmelt, Snow deterioration, Snow deformation, Slush, Electrical insulation, Electric corona

50-5384

Leakage resistance of atmospheric iced insulators and chemical data of ice and snow at Mt. Yokote.

Sugawara, N., Hokari, K., Hirota, M., Tatokoro, Y., Ando, H., Ozawa, A., International Workshop on Atmospheric Icing of Structures, 7th, Chicoutimi, Quebec, June 3-7, 1996. Proceedings. IWAIS '96. Edited by M. Farzaneh and J. Laflamme, Chicoutimi, Université du Québec, 1996, p.333-338, 10 refs.

Power line icing, Ice accretion, Ice loads, Snow loads, Ice composition, Snow composition, Ice electrical properties, Snow electrical properties, Electrical insulation, Electrical resistivity, Electric corona, Japan—Hokkaido

50-5385

Influence of temperature on microdischarges between ice particles.

Coquillat, S., Chauzy, S., Georgis, J.F., International Workshop on Atmospheric Icing of Structures, 7th, Chicoutimi, Quebec, June 3-7, 1996. Proceedings. IWAIS '96. Edited by M. Farzaneh and J. Laflamme, Chicoutimi, Université du Québec, 1996, p.339-344, 20 refs.

Cloud physics, Cloud electrification, Thunderstorms, Lightning, Icicles, Ice temperature, Ice electrical properties, Charge transfer

50-5386

Probability of flashover due to decrease in distance between power line conductors caused by ice shedding.

Savadjiev, K., Farzaneh, M., International Workshop on Atmospheric Icing of Structures, 7th, Chicoutimi, Quebec, June 3-7, 1996. Proceedings. IWAIS '96. Edited by M. Farzaneh and J. Laflamme, Chicoutimi, Université du Québec, 1996, p.345-350, 8 refs.

Power line icing, Ice accretion, Ice loads, Ice removal, Ice breaking, Ice electrical properties, Electric corona, Statistical analysis

50-5387

Effects of high voltage on the structure of ice.

Farzaneh, M., Bouillot, J., Teisseyre, Y., Svensson, E.C., Dubouchet, P., Donaberger, R.L., International Workshop on Atmospheric Icing of Structures, 7th, Chicoutimi, Quebec, June 3-7, 1996. Proceedings. IWAIS '96. Edited by M. Farzaneh and J. Laflamme, Chicoutimi, Université du Québec, 1996, p.351-354, 15 refs.

Power line icing, Ice accretion, Ice crystal structure, Ice crystal growth, Ice electrical properties, Neutron diffraction

50-5388

Effect of conductive ice and pressure on flashover performance of short insulator strings.

Shu, L.C., Sun, C.X., Gu, L.G., International Workshop on Atmospheric Icing of Structures, 7th, Chicoutimi, Quebec, June 3-7, 1996. Proceedings. IWAIS '96. Edited by M. Farzaneh and J. Laflamme, Chicoutimi, Université du Québec, 1996, p.357-362, 4 refs.

Power line icing, Ice accretion, Ice loads, Ice electrical properties, Atmospheric pressure, Wind pressure, Electrical insulation, Electric corona

50-5389

Flashover on ice surfaces.

Farzaneh, M., Li, S.Y., Srivastava, K.D., International Workshop on Atmospheric Icing of Structures, 7th, Chicoutimi, Quebec, June 3-7, 1996. Proceedings. IWAIS '96. Edited by M. Farzaneh and J. Laflamme, Chicoutimi, Université du Québec, 1996, p.363-368, 19 refs.

Power line icing, Ice accretion, Ice electrical properties, Electrical insulation, Electric corona

50-5390

Artificial rime-covering and discharge test of long insulator strings.

Su, F.H., Jia, Y.M., International Workshop on Atmospheric Icing of Structures, 7th, Chicoutimi, Quebec, June 3-7, 1996. Proceedings. IWAIS '96. Edited by M. Farzaneh and J. Laflamme, Chicoutimi, Université du Québec, 1996, p.369-372, 2 refs.

Power line icing, Ice accretion, Glaze, Ice electrical properties, Electrical insulation, Electric corona

50-5391

Improved numerical model for wind turbine icing.

Finstad, K.J., Makkonen, L., International Workshop on Atmospheric Icing of Structures, 7th, Chicoutimi, Quebec, June 3-7, 1996. Proceedings. IWAIS '96. Edited by M. Farzaneh and J. Laflamme, Chicoutimi, Université du Québec, 1996, p.373-378, 13 refs.

Wind power generation, Propellers, Ice accretion, Ice loads, Ice forecasting, Wind pressure, Computerized simulation

50-5392

Numerical simulation of aircraft icing on wings and nacelles.

Brahimi, M.T., Tran, P., Tezok, F., Paraschivoiu, I., International Workshop on Atmospheric Icing of Structures, 7th, Chicoutimi, Quebec, June 3-7, 1996. Proceedings. IWAIS '96. Edited by M. Farzaneh and J. Laflamme, Chicoutimi, Université du Québec, 1996, p.379-383, 18 refs.

Aircraft icing, Ice accretion, Ice loads, Ice forecasting, Mathematical models

50-5393

Laboratory study and computer simulation of the accretion of monodisperse droplets on a thin wire.

Prodi, F., Porcù, F., Maschio, M., Santachiara, G., International Workshop on Atmospheric Icing of Structures, 7th, Chicoutimi, Quebec, June 3-7, 1996. Proceedings. IWAIS '96. Edited by M. Farzaneh and J. Laflamme, Chicoutimi, Université du Québec, 1996, p.384-389, 17 refs.

Ice accretion, Ice loads, Ice forecasting, Supercooled clouds, Cloud droplets, Computerized simulation, Environmental tests

50-5394

Study and analysis of the factors having influence on ice coating of electric wires.

Wang, S.L., International Workshop on Atmospheric Icing of Structures, 7th, Chicoutimi, Quebec, June 3-7, 1996. Proceedings. IWAIS '96. Edited by M. Farzaneh and J. Laflamme, Chicoutimi, Université du Québec, 1996, p.390-395.

Power line icing, Ice accretion, Ice loads, Ice storms, Accidents, China—Yunnan Province

50-5395

Anemometer acquisition system with solar cells for transmission line maintenance in heavy icing area.

Ozawa, A., Kagami, J., Sugawara, N., Hokari, K., Hirota, M., Shimizu, S., International Workshop on Atmospheric Icing of Structures, 7th, Chicoutimi, Quebec, June 3-7, 1996. Proceedings. IWAIS '96. Edited by M. Farzaneh and J. Laflamme, Chicoutimi, Université du Québec, 1996, p.396-400, 2 refs.

Power line supports, Power line icing, Ice accretion, Ice loads, Ice storms, Ice forecasting, Ice control, Snow loads, Wind pressure, Anemometers

50-5396

Atmospheric icing action on overhead electrical transmission line in Polish national standard.

Dembicki, E., Sokolowski, P.J., International Workshop on Atmospheric Icing of Structures, 7th, Chicoutimi, Quebec, June 3-7, 1996. Proceedings. IWAIS '96. Edited by M. Farzaneh and J. Laflamme, Chicoutimi, Université du Québec, 1996, p.401-406, 9 refs.

Power line icing, Ice accretion, Ice loads, Hoarfrost, Wind pressure, Power line supports, Design criteria, Standards, Poland

50-5397

New transducer for measurement of ice loads for utilities.

Seppa, T.O., International Workshop on Atmospheric Icing of Structures, 7th, Chicoutimi, Quebec, June 3-7, 1996. Proceedings. IWAIS '96. Edited by M. Farzaneh and J. Laflamme, Chicoutimi, Université du Québec, 1996, p.407-407.

Power line icing, Ice accretion, Ice loads, Ice detection, Telemetering equipment, Strain measuring instruments

50-5398

Significance of landscape reliefs for choosing the route of overhead lines with regard to meteorological conditions.

Zálešák, Z., Lehký, P., Stěničková, D., International Workshop on Atmospheric Icing of Structures, 7th, Chicoutimi, Quebec, June 3-7, 1996. Proceedings. IWAIS '96. Edited by M. Farzaneh and J. Laflamme, Chicoutimi, Université du Québec, 1996, p.409-411, 2 refs.

Power line icing, Ice accretion, Ice loads, Ice forecasting, Wind pressure, Meteorological data, Statistical analysis, Route surveys, Czech Republic

50-5399

Simple model for freezing rain ice loads.

Jones, K.F., MP 3827, International Workshop on Atmospheric Icing of Structures, 7th, Chicoutimi, Quebec, June 3-7, 1996. Proceedings. IWAIS '96. Edited by M. Farzaneh and J. Laflamme, Chicoutimi, Université du Québec, 1996, p.412-416, 12 refs.

Ice storms, Ice accretion, Icing rate, Ice loads, Ice forecasting, Wind factors, Precipitation (meteorology), Meteorological data, Mathematical models, Computerized simulation

There are many models for hindcasting ice loads from meteorological data measured during freezing rain storms. Each model is based on the physics of the ice accretion process and on empirical observations. However, these models predict significantly different ice loads for the same freezing rain storm, making it difficult to use them to determine design ice loads. In this paper the author describes a simple ice load model that can be used in back-of-the-envelope calculations of ice loads based on the precipitation rate and wind speed. Using historical weather data from Springfield, IL, the author compares the ice loads from this model with those from other models. The modeled and measured ice loads are also compared from one storm that occurred at CRREL's freezing rain weather station.

50-5400

Energy saving characteristics of new type road-heating system.

Hokari, K., Sugawara, N., Watanabe, T., Sugawara, H., International Workshop on Atmospheric Icing of Structures, 7th, Chicoutimi, Quebec, June 3-7, 1996. Proceedings. IWAIS '96. Edited by M. Farzaneh and J. Laflamme, Chicoutimi, Université du Québec, 1996, p.417-421, 7 refs.

Road icing, Snowfall, Snow removal, Snow melting, Artificial melting, Electric heating, Weather forecasting, Road maintenance, Cost analysis, Japan

50-5401

Research overview of ground de/anti-icing products.

Bernardin, S., Laforte, J.L., Louchez, P., International Workshop on Atmospheric Icing of Structures, 7th, Chicoutimi, Quebec, June 3-7, 1996. Proceedings. IWAIS '96. Edited by M. Farzaneh and J. Laflamme, Chicoutimi, Université du Québec, 1996, p.422-428, 18 refs.

Aircraft icing, Ice accretion, Ice adhesion, Ice loads, Ice removal, Chemical ice prevention

50-5402

Problems related to ice formation on the guy-wires of Hydro-Québec telecommunications towers: a critical review of the literature.

Gastonguay, L., Champagne, G.Y., International Workshop on Atmospheric Icing of Structures, 7th, Chicoutimi, Quebec, June 3-7, 1996. Proceedings. IWAIS '96. Edited by M. Farzaneh and J. Laflamme, Chicoutimi, Université du Québec, 1996, p.429-433, 11 refs.

Towers, Cables (ropes), Ice accretion, Ice adhesion, Ice loads, Glaze, Protective coatings, Chemical ice prevention

50-5403

Temperature-controlled tests on a snow-removal system for photovoltaic panels.

Gastonguay, L., Champagne, G.Y., Bergevin, B., Hosatte, P., Vallières, N., International Workshop on Atmospheric Icing of Structures, 7th, Chicoutimi, Quebec, June 3-7, 1996. Proceedings. IWAIS '96. Edited by M. Farzaneh and J. Laflamme, Chicoutimi, Université du Québec, 1996, p.434-437.

Snow loads, Snow removal, Snow melting, Artificial melting, Electric power, Solar radiation

50-5404

Experience and analysis of galloping phenomenon in overhead transmission lines in Iran.

Javahermanesh, M., International Workshop on Atmospheric Icing of Structures, 7th, Chicoutimi, Quebec, June 3-7, 1996. Proceedings. IWAIS '96. Edited by M. Farzaneh and J. Laflamme, Chicoutimi, Université du Québec, 1996, p.438-443, 6 refs.

Power line icing, Ice accretion, Ice loads, Wind pressure, Vibration, Damping, Iran

50-5405

Introduction of two-metal earth wires in additional load conditions—reason for damage.

Jakše, J., Kern, J., International Workshop on Atmospheric Icing of Structures, 7th, Chicoutimi, Quebec, June 3-7, 1996. Proceedings. IWAIS '96. Edited by M. Farzaneh and J. Laflamme, Chicoutimi, Université du Québec, 1996, p.444-447, 3 refs.

Power line icing, Ice loads, Electrical grounding, Design criteria, Slovenia

50-5408

Lithogenic sediment on arctic pack ice: potential aeolian flux and contribution to deep sea sediments.

Pfirman, S., Wollenburg, I., Thiede, J., Lange, M.A., Paleoclimatology and paleometeorology: modern and past patterns of global atmospheric transport. North Atlantic Treaty Organization. Advanced Science Institutes. NATO ASI Series C, Vol.282. Edited by M. Leinen and M. Sarnthein, Dordrecht, Kluwer Academic Publishers, 1989, p.463-493, Refs. p.486-493.

DLC QC981.8.C5N37 1987

Ice air interface, Ice composition, Impurities, Ice rafting, Ice cover effect, Drift, Wind erosion, Dust, Eolian soils, Bottom sediment, Marine deposits, Atmospheric circulation, Ocean currents, Paleoclimatology

50-5409

Past and present oceanic energy balance patterns.

Newell, R.E., Hsiung, J., Paleoclimatology and paleometeorology: modern and past patterns of global atmospheric transport. North Atlantic Treaty Organization. Advanced Science Institutes. NATO ASI Series C, Vol.282. Edited by M. Leinen and M. Sarnthein, Dordrecht, Kluwer Academic Publishers, 1989, p.497-512, 17 refs.

DLC QC981.8.C5N37 1987

Air water interactions, Atmospheric circulation, Ocean currents, Heat balance, Ice age theory, Paleoclimatology

50-5410

Possible effects of orbital variations on past sources and transports of eolian material: estimates from general circulation model experiments.

Kutzbach, J.E., Paleoclimatology and paleometeorology: modern and past patterns of global atmospheric transport. North Atlantic Treaty Organization. Advanced Science Institutes. NATO ASI Series C, Vol.282. Edited by M. Leinen and M. Sarnthein, Dordrecht, Kluwer Academic Publishers, 1989, p.513-521, 31 refs.

DLC QC981.8.C5N37 1987

Atmospheric circulation, Eolian soils, Wind erosion, Global change, Ice age theory, Paleoclimatology

50-5411

Mineral dust record in a high altitude alpine glacier (Colle Gnifetti, Swiss Alps).

Wagenbach, D., Geis, K., Paleoclimatology and paleometeorology: modern and past patterns of global atmospheric transport. North Atlantic Treaty Organization. Advanced Science Institutes. NATO ASI Series C, Vol.282. Edited by M. Leinen and M. Sarnthein, Dordrecht, Kluwer Academic Publishers, 1989, p.543-564, 42 refs.

DLC QC981.8.C5N37 1987

Mountain glaciers, Glacial meteorology, Atmospheric circulation, Atmospheric composition, Ice air interface, Glacier ice, Ice cores, Ice dating, Ice composition, Impurities, Dust, Paleoclimatology, Switzerland

50-5412

Bryophyte vegetation in polar regions.

Longton, R.E., Bryophyte ecology. Edited by A.J.E. Smith, London, Chapman and Hall, 1982, p.123-165, Refs. p.161-165.

DLC QK533.6.B78 1982

Tundra vegetation, Vegetation patterns, Plant ecology, Mosses

Bryophyte vegetation is compared in the Arctic and Antarctic. Analogies are suggested in wetland, mesic, and polar desert plant communities for both polar regions. The dominant species and habitats of bryophyte communities in the maritime Antarctic, continental Antarctica, and subantarctic islands, are described. It is noted that bryophyte communities grow luxuriantly in continental antarctic lakes at depths up to 10 m where the corresponding terrestrial vegetation is sparse.

50-5413

Alpine communities.

Geissler, P., Bryophyte ecology. Edited by A.J.E. Smith, London, Chapman and Hall, 1982, p.167-189, 47 refs.

DLC QK533.6.B78 1982

Alpine tundra, Forest tundra, Tundra vegetation, Mosses, Plant ecology, Vegetation patterns

50-5414

Quaternary bryophyte palaeo-ecology.

Birks, H.J.B., Bryophyte ecology. Edited by A.J.E. Smith, London, Chapman and Hall, 1982, p.473-490, Refs. p.487-490.

DLC QK533.6.B78 1982

Paleobotany, Paleoecology, Paleoclimatology, Mosses, Fossils, Quaternary deposits

50-5415

High altitudes of the Himalaya (biogeography, ecology & conservation).

Pangtey, Y.P.S., ed, Rawal, R.S., ed, Naini Tal, India, Gyanodaya Prakashan, 1994, 418p., Refs. passim. For selected papers see 50-5416 through 50-5435.

DLC QH77.H54H54 1994

Plant ecology, Vegetation patterns, Forest tundra, Alpine tundra, Forest ecosystems, Forest lines, Grazing, Meadow soils, Soil conservation, Himalaya Mountains

50-5416

Himalaya, its ecology and biogeography: a review.

Mani, M.S., High altitudes of the Himalaya (biogeography, ecology & conservation). Edited by Y.P.S. Pangtey and R.S. Rawal, Naini Tal, India, Gyanodaya Prakashan, 1994, p.1-10, 6 refs.

DLC QH77.H54H54 1994

Ecosystems, Ecology, Biogeography, Acclimatization, Forest tundra, Alpine tundra, Forest lines, Snow line, Himalaya Mountains

50-5417

Arcto-alpine and boreal elements in the high altitude flora of north west Himalaya.

Gupta, R.K., High altitudes of the Himalaya (biogeography, ecology & conservation). Edited by Y.P.S. Pangtey and R.S. Rawal, Naini Tal, India, Gyanodaya Prakashan, 1994, p.11-32, 66 refs.

DLC QH77.H54H54 1994

Alpine glaciation, Paleobotany, Plant ecology, Vegetation patterns, Revegetation, Introduced plants, Biogeography, Acclimatization, Forest tundra, Alpine tundra, Paleoclimatology, Himalaya Mountains

50-5418

Ecology and conservation of alpine meadows in central Himalaya, India.

Ram, J., Singh, S.P., High altitudes of the Himalaya (biogeography, ecology & conservation). Edited by Y.P.S. Pangtey and R.S. Rawal, Naini Tal, India, Gyanodaya Prakashan, 1994, p.33-55, 38 refs.

DLC QH77.H54H54 1994

Meadow soils, Soil conservation, Plant ecology, Vegetation patterns, Forest tundra, Alpine tundra, Forest lines, Snow line, Biomass, Grazing, Himalaya Mountains

50-5419

Vegetation patterns in the alpine zone of the Himalaya in eastern Nepal.

Kikuchi, T., High altitudes of the Himalaya (biogeography, ecology & conservation). Edited by Y.P.S. Pangtey and R.S. Rawal, Naini Tal, India, Gyanodaya Prakashan, 1994, p.56-64, 17 refs.

DLC QH77.H54H54 1994

Meadow soils, Plant ecology, Vegetation patterns, Forest tundra, Alpine tundra, Nepal

50-5420

Plant communities in alpine habitat with special reference to Garhwal Himalaya.

Rawat, D.S., Dangwal, L.R., Gaur, R.D., High altitudes of the Himalaya (biogeography, ecology & conservation). Edited by Y.P.S. Pangtey and R.S. Rawal, Naini Tal, India, Gyanodaya Prakashan, 1994, p.65-75, 24 refs.

DLC QH77.H54H54 1994

Plant ecology, Vegetation patterns, Plant physiology, Growth, Forest tundra, Alpine tundra, Forest lines, Snow line, Acclimatization, Himalaya Mountains

50-5421

High altitude flora of western Himalaya: peculiarities and conservation.

Aswal, B.S., High altitudes of the Himalaya (biogeography, ecology & conservation). Edited by Y.P.S. Pangtey and R.S. Rawal, Naini Tal, India, Gyanodaya Prakashan, 1994, p.76-88, 75 refs.

DLC QH77.H54H54 1994

Plant ecology, Vegetation patterns, Plants (botany), Acclimatization, Forest tundra, Alpine tundra, Soil conservation, Himalaya Mountains

50-5422

Protected areas and conservation of rare endemic plants in the Himalaya.

Rawat, G.S., High altitudes of the Himalaya (biogeography, ecology & conservation). Edited by Y.P.S. Pangtey and R.S. Rawal, Naini Tal, India, Gyanodaya Prakashan, 1994, p.89-101, 20 refs.

DLC QH77.H54H54 1994

Plant ecology, Vegetation patterns, Forest ecosystems, Forest tundra, Alpine tundra, Soil conservation, Environmental protection, Himalaya Mountains

50-5423

Ladakh: an update on natural resources.

Dhar, U., Jee, V., Kachroo, P., High altitudes of the Himalaya (biogeography, ecology & conservation). Edited by Y.P.S. Pangtey and R.S. Rawal, Naini Tal, India, Gyanodaya Prakashan, 1994, p.102-114, 30 refs.

DLC QH77.H54H54 1994

Plant ecology, Vegetation patterns, Forest ecosystems, Forest tundra, Alpine tundra, Mountain soils, Desert soils, Soil conservation, Natural resources, Environmental protection, India—Ladakh

50-5424

Assessment on the diversity and status of the alpine plants of Indian Himalaya.

Samant, S.S., High altitudes of the Himalaya (biogeography, ecology & conservation). Edited by Y.P.S. Pangtey and R.S. Rawal, Naini Tal, India, Gyanodaya Prakashan, 1994, p.115-127, 10 refs.

DLC QH77.H54H54 1994

Plant ecology, Vegetation patterns, Plants (botany), Biogeography, Forest ecosystems, Forest tundra, Alpine tundra, Natural resources, Himalaya Mountains

50-5425
Sustenance of central Himalayan vegetational wealth at the brink of depletion.
Negi, K.S., Pant, K.C., High altitudes of the Himalaya (biogeography, ecology & conservation). Edited by Y.P.S. Pangtey and R.S. Rawal, Naini Tal, India, Gyanodaya Prakashan, 1994, p.128-137.
DLC QH77.H54H54 1994
Plant ecology, Vegetation patterns, Plants (botany), Agriculture, Natural resources, Himalaya Mountains

50-5426
Resource ecology for soil conservation and sustainable development in the cold desert regions of West Himalaya.
Gupta, R.K., High altitudes of the Himalaya (biogeography, ecology & conservation). Edited by Y.P.S. Pangtey and R.S. Rawal, Naini Tal, India, Gyanodaya Prakashan, 1994, p.138-178, 75 refs.
DLC QH77.H54H54 1994
Desert soils, Mountain soils, Meadow soils, Plant ecology, Vegetation patterns, Grazing, Desiccation, Soil erosion, Soil conservation, Revegetation, Land reclamation, Land development, Himalaya Mountains

50-5427
Vegetation dynamics and animal behaviour in an alpine pasture of the Garhwal Himalaya.
Sundriyal, R.C., High altitudes of the Himalaya (biogeography, ecology & conservation). Edited by Y.P.S. Pangtey and R.S. Rawal, Naini Tal, India, Gyanodaya Prakashan, 1994, p.179-192, 36 refs.
DLC QH77.H54H54 1994
Plant ecology, Vegetation patterns, Forest tundra, Alpine tundra, Biomass, Grazing, Meadow soils, Soil erosion, Soil conservation, Himalaya Mountains

50-5428
Structural and functional attributes of a tussock grass community in a central Himalayan alpine grassland.
Rikhari, H.C., Negi, G.C.S., High altitudes of the Himalaya (biogeography, ecology & conservation). Edited by Y.P.S. Pangtey and R.S. Rawal, Naini Tal, India, Gyanodaya Prakashan, 1994, p.193-202, 23 refs.
DLC QH77.H54H54 1994
Plant ecology, Vegetation patterns, Grasses, Meadow soils, Alpine tundra, Biomass, Grazing, Growth, Himalaya Mountains

50-5429
Ecological study in an alpine pasture of Bhagirathi Valley, Garhwal Himalaya.
Rajwar, G.S., Dhaulakhandi, M., High altitudes of the Himalaya (biogeography, ecology & conservation). Edited by Y.P.S. Pangtey and R.S. Rawal, Naini Tal, India, Gyanodaya Prakashan, 1994, p.203-208, 28 refs.
DLC QH77.H54H54 1994
Plant ecology, Vegetation patterns, Forest tundra, Alpine tundra, Meadow soils, Grazing, Biomass, Himalaya Mountains

50-5430
Preliminary habitat suitability index model for Himalayan musk deer.
Rawat, G.S., High altitudes of the Himalaya (biogeography, ecology & conservation). Edited by Y.P.S. Pangtey and R.S. Rawal, Naini Tal, India, Gyanodaya Prakashan, 1994, p.209-219, 29 refs.
DLC QH77.H54H54 1994
Plant ecology, Vegetation patterns, Forest tundra, Alpine tundra, Forest lines, Animals, Grazing, Himalaya Mountains

50-5431
High altitude (above timber-line) bryoflora of Kumaun Himalaya.
Tewari, S.D., Pant, G., Joshi, S.R., Airi, S., High altitudes of the Himalaya (biogeography, ecology & conservation). Edited by Y.P.S. Pangtey and R.S. Rawal, Naini Tal, India, Gyanodaya Prakashan, 1994, p.263-280, 22 refs.
DLC QH77.H54H54 1994
Plant ecology, Vegetation patterns, Mosses, Alpine tundra, Forest lines, Himalaya Mountains

50-5432
Survey of fungal plant diseases in a part of high altitudes of central Himalaya.
Bisht, G.S., Srivastava, S.L., Singh, H., High altitudes of the Himalaya (biogeography, ecology & conservation). Edited by Y.P.S. Pangtey and R.S. Rawal, Naini Tal, India, Gyanodaya Prakashan, 1994, p.281-297, 38 refs.
DLC QH77.H54H54 1994
Plant ecology, Vegetation patterns, Plant physiology, Physiological effects, Fungi, Forest tundra, Alpine tundra, Himalaya Mountains

50-5433
Effect of disturbance on microbial population and their activities in forest soils at higher altitudes of Meghalaya.
Joshi, S.R., Sharma, G.D., Mishra, R.R., High altitudes of the Himalaya (biogeography, ecology & conservation). Edited by Y.P.S. Pangtey and R.S. Rawal, Naini Tal, India, Gyanodaya Prakashan, 1994, p.298-309, 47 refs.
DLC QH77.H54H54 1994
Forest soils, Mountain soils, Soil microbiology, Soil chemistry, Soil erosion, Soil conservation, Fungi, Bacteria, Himalaya Mountains

50-5434
High altitude forests with special reference to timber line in Kumaun, central Himalaya.
Rawal, R.S., Pangtey, Y.P.S., High altitudes of the Himalaya (biogeography, ecology & conservation). Edited by Y.P.S. Pangtey and R.S. Rawal, Naini Tal, India, Gyanodaya Prakashan, 1994, p.353-399, 58 refs.
DLC QH77.H54H54 1994
Plant ecology, Vegetation patterns, Forest ecosystems, Forest tundra, Forest lines, Phenology, Himalaya Mountains

50-5435
Biomass, net primary production and nutrient dynamics of *Quercus floribunda* Lindl. forest in central Himalaya.
Rawat, Y.S., Adhikari, B.S., High altitudes of the Himalaya (biogeography, ecology & conservation). Edited by Y.P.S. Pangtey and R.S. Rawal, Naini Tal, India, Gyanodaya Prakashan, 1994, p.400-418, 42 refs.
DLC QH77.H54H54 1994
Plant ecology, Vegetation patterns, Trees (plants), Forest ecosystems, Forest soils, Biomass, Nutrient cycle, Himalaya Mountains

50-5437
Arctic research vessel preliminary design report.
University of Alaska. Institute of Marine Science, Fairbanks, Aug. 1994, var.p., 10 refs. Abridged version.
Oceanography, Oceanographic surveys, Icebreakers, Design, Design criteria, Superstructures, Structural analysis, Performance

50-5438
International Conference on the Role of Polar Regions in Global Change.
Weller, G.E., *World Meteorological Organization. Bulletin*, July 1991, 40(3), p.233-234.
Climatology, Polar atmospheres, Global change, Climatic changes, Meetings, International cooperation

50-5439
Alpine meteorology—conference in Engelberg, Switzerland, September 1990.
Davies, H.C., *World Meteorological Organization. Bulletin*, July 1991, 40(3), p.235-237.
Meteorology, Climatology, Weather forecasting, Meetings, International cooperation

50-5440
Russia opens far east offshore. *Offshore engineer*, May 1993, p.7.
Offshore drilling, Crude oil, Economic development, Exploration, Geological surveys, Okhotsk Sea

50-5441
Subsea pipe freeze first on East Brae. *Offshore engineer*, Dec. 1993, p.73.
Gas pipelines, Offshore structures, Underground pipelines, Pipeline freezing, Maintenance, Sealing

50-5442
Processes of modern sedimentation in the southern Weddell Sea, Antarctica—evidence from surface sediments.
Melles, M., Kuhn, G., Fütterer, D.K., Meischner, D., *Polarforschung*, 1994 (Pub. 1995), 64(2), p.45-74, 107 refs.
Sediments, Sea ice, Ice shelves, Hydrography, Geochemistry, Bottom topography, Antarctica—Weddell Sea
Seventy surface sediment samples from the continental shelf and slope of the southern Weddell Sea have been analyzed for grain-size distributions, chemical composition, mineral assemblages in the clay fraction, biogenic and terrigenous components in the coarse fraction, and stable isotope ratios in planktonic foraminifera. New information is presented on modern sedimentary processes and their dependence on the present-day physiographical, glaciological and hydrographical setting. The circulation of the water masses as reflected in the surface sediments differs in detail from that known from *in situ* measurements. Regional differences in both the biogenic production and the preservation of biogenic components are controlled by the physical and chemical properties of the water masses rather than by differences in the sea-ice coverage or in water depth. (Auth. mod.)

50-5443
Subglacial and seabed topography, ice thickness and water column thickness in the vicinity of Filchner-Ronne-Schelfeis, Antarctica.
Vaughan, D.G., et al, *Polarforschung*, 1994 (Pub. 1995), 64(2), p.75-88, The full map of subglacial and seabed topography at a scale of 1:2,000,000 is housed in a jacket inside the back cover. 55 refs.
Sea ice, Ice cover thickness, Bottom topography, Sounding, Maps, Antarctica—Filchner Ice Shelf, Antarctica—Ronne Ice Shelf
Presented here are thematic maps of subglacial and seabed topography, and water column thickness, over Filchner-Ronne Ice Shelf, its hinterland and the adjacent portion of the Weddell Sea. Subglacial and seabed topography were derived from various bathymetric observations, seismic and radar soundings. Ice shelf draft was deduced from an inversion of ERS-1 radar altimetry, assuming hydrostatic equilibrium. Finally, the water column thickness was calculated as the difference between the sea bed depth and the ice shelf draft. The seabed morphology beneath the ice shelf is dominated by a slope down towards the interior of the continent. Seabed depths near the ice front of around 200 to 300 m increase to more than 1500 m at the grounding line of some ice streams. Deep troughs, possibly glacially deepened, run beneath the eastern and western sides of the ice shelf and cross the continental shelf. An area of small water column thickness to the northwest of Berkner I. suggests that extensive grounding could occur after a relatively small change in the ice shelf. This might result in very significant changes to the positions of the Berkner I. summits and the rates of production of Ice Shelf Water. (Auth.)

50-5444
Two calorimetrically distinct states of liquid water below 150 Kelvin.
Johari, G.P., Hallbrucker, A., Mayer, E., *Science*, July 5, 1996, 273(5271), p.90-92, 51 refs.
Viscosity, Supercooling, Liquid phases, Amorphous solid water

50-5445
Compression of ice to 210 gigapascals: infrared evidence for a symmetric hydrogen-bonded phase.
Goncharov, A.F., Struzhkin, V.V., Somayazulu, M.S., Hemley, R.J., Mao, H.K., *Science*, July 12, 1996, 273(5272), p.218-220, 26 refs.
High pressure ice, Hydrogen bonds, Cubic ice, Ice physics, Infrared spectroscopy, Deuterium oxide ice

50-5446
Polar hydrocarbon technologies: future developments.
Yates, J., Cunningham, P., Smith, D., *Marine policy*, Sep. 1995, 19(5), p.419-436, 35 refs., shown as footnotes.
Sea ice, Fast ice, Icebergs, Marine geology, Economic development, Construction equipment
This paper addresses the physical and technological difficulties inherent in the extraction of marine hydrocarbons in the polar regions. The factors are then analyzed to assess the potential for the transfer from the Arctic to the Antarctic of current and emerging systems of technology. The paper begins with a review of the physical environment of the polar regions, and the technology currently employed in the Arctic for hydrocarbon exploration. It then analyzes

the problems concomitant with the transfer of current and emerging technologies in the Arctic to the Antarctic. The paper is purely speculative; the authors fully concur with the terms of the current Antarctic Treaty which does not allow the extraction of any resources for at least 50 years, and would hope to see this extended if possible. (Auth.)

50-5447

Ecologic-genetic analysis of tundra-steppe soils in northeastern Siberia.

Cherniakhovskiĭ, D.A., *Eurasian soil science,* July 1996, 28(7), p.12-25, Translated from Pochvovedenie. 28 refs.

Soil science, Geocryology, Steppes, Tundra soils, Organic soils, Soil profiles, Soil formation, Degradation, Periglacial processes, Chemical properties, Classifications, Russia—Siberia

50-5448

Forecast of rain erosion of tundra soils on the Yamal Peninsula.

Grigor'ev, V.IA., Sidorchuk, A.IU., *Eurasian soil science,* July 1996, 28(7), p.90-102, Translated from Pochvovedenie. 7 refs.

Precipitation (meteorology), Tundra soils, Soil erosion, Soil aggregates, Water erosion, Runoff, Mathematical models, Forecasting, Russia—Yamal Peninsula

50-5449

Cryogenic fissures as a factor of soil anisotropy.

Kulikov, A.I., *Eurasian soil science,* June 1996, 28(6), p.15-22, Translated from Pochvovedenie. 15 refs.

Geocryology, Frost action, Frozen ground mechanics, Soil formation, Cracking (fracturing), Patterned ground, Meadow soils, Soil structure, Soil profiles, Anisotropy, Statistical analysis

50-5450

Numerical global meteorological sulfur transport model and its application to arctic air pollution.

Dastoor, A.P., Pudykiewicz, J., *Atmospheric environment,* May 1996, 30(3), p.1501-1522, 50 refs.

Climatology, Polar atmospheres, Cloud physics, Cloud dissipation, Air pollution, Aerosols, Mass transfer, Scavenging, Atmospheric circulation, Chemical properties, Simulation, Mathematical models

50-5451

Comparison of sea ice simulations with interactive and monthly averaged forcing models.

Wu, X.R., Simmonds, I., Budd, W.F., *Journal of geophysical research,* Apr. 27, 1996, 101(D5), p.9359-9374, 29 refs.

Climatology, Oceanography, Sea ice distribution, Pack ice, Drift, Air ice water interaction, Heat flux, Seasonal variations, Ice models, Mathematical models, Thermodynamics, Wind factors, Ice cover effect

A dynamic-thermodynamic sea ice model is developed and coupled with a general circulation model to simulate the seasonal cycle of the global sea ice distribution. The coupled system yields a credible seasonal simulation of global sea ice. When monthly averaged atmospheric data (taken from the mean of the coupled run) are used to force the sea ice model, the seasonal cycle of sea ice extent (to the outer ice edge) is quite similar to that simulated in the interactive run. However, the actual sea ice covered area (i.e., excluding leads) differs considerably between the two simulations. Sea ice is more compact in the monthly averaged forced run than in the interactive run throughout the year in both hemispheres. The sea ice thickness distribution also differs between the two runs. In general, the sea ice is more open and thicker in the seasonal ice zone of the two polar regions for the interactive coupled case than for the mean forcing. (Auth. mod.)

50-5452

Objective determination of the polar vortex using Ertel's potential vorticity.

Nash, E.R., Newman, P.A., Rosenfield, J.E., Schoeberl, M.R., *Journal of geophysical research,* Apr. 27, 1996, 101(D5), p.9471-9478, 43 refs.

Polar atmospheres, Atmospheric physics, Climatology, Stratosphere, Atmospheric circulation, Turbulent boundary layer, Turbulent diffusion, Decomposition, Structural analysis, Wind velocity, Seasonal variations

50-5453

Noctilucent clouds and the thermal structure near the arctic mesopause in summer.

Lübken, F.J., Fricke, K.H., Langer, M., *Journal of geophysical research,* Apr. 27, 1996, 101(D5), p.9489-9508, 57 refs.

Climatology, Polar atmospheres, Cloud physics, Cloud cover, Stratification, Air temperature, Profiles, Saturation, Ice optics, Particles, Lidar, Backscattering, Thermal analysis

50-5454

Comment on "A laboratory study of static charging by fracture in ice growing by riming" by Eldo E. Avila and Giorgio M. Caranti.

Jayaratne, R., Peck, S.L., Saunders, C., Avila, E.E., Aguirre Varela, G.G., Caranti, G.M., *Journal of geophysical research,* Apr. 27, 1996, 101(D5), p.9533-9538, 18 refs. Includes reply. For pertinent paper see 48-4851.

Cloud physics, Ice physics, Cloud electrification, Ice crystal collision, Cracking (fracturing), Snow pellets, Hoarfrost, Ice surface, Charge transfer, Simulation

50-5455

Carbon acquisition and growth of antarctic sea ice diatoms in closed bottle incubations.

Gleitz, M., Kukert, H., Riebesell, U., Dieckmann, G.S., *Marine ecology progress series,* May 17, 1996, 135(1-3), p.169-177, 35 refs.

Marine biology, Plant ecology, Pack ice, Algae, Biomass, Nutrient cycle, Ice composition, Brines, Chemical properties, Simulation

Mixed cultures of 4 polar diatoms regularly found in antarctic pack ice were grown over 20 d in closed bottles at high light and at 0°C in order to investigate growth physiology and biomass production under conditions simulating the sea ice habitat during summer. Slight increases in cell number were observed for all species 2 d later. Peak biomass amounted to 140 micro-g chl *a*. The data confirm that intense photosynthetic carbon assimilation may lead to profound chemical changes in isolated interstitial brine solutions, with significant consequences for sea ice biota. The capacity to efficiently utilize ambient DIC, possibly mediated by virtue of favorable surface to volume ratios as well as active pathways of inorganic carbon acquisition, favors growth of small diatoms, and may be an important factor driving ice algal species succession during summer blooms. Since only 2 species continued to grow in fresh medium following experimental incubation, differential tolerance to chemical variations may influence the seeding potential of ice algae following release into the open water. (Auth. mod.)

50-5456

Microbial ecology of sea ice at a coastal antarctic site: community composition, biomass and temporal change.

Archer, S.D., Leakey, R.J.G., Burkill, P.H., Sleigh, M.A., Appleby, C.J., *Marine ecology progress series,* May 17, 1996, 135(1-3), p.179-195, 73 refs.

Marine biology, Microbiology, Plant ecology, Biomass, Bacteria, Algae, Bottom ice, Fast ice, Sampling, Geochemistry, Ice composition, Seasonal variations, Antarctica—Weddell Sea

The coastal sea ice in the vicinity of Davis Station supports a diverse microbial community which varies in composition and biomass in response to increasing insolation and temperature during the austral summer. To understand more fully the fate of photosynthetically fixed carbon in sea ice, the dynamics of community composition, biomass and production in autotrophs, heterotrophic protozoa and bacteria were examined. The microbial community inhabiting the bottom few centimeters of land-fast ice differed markedly from the interior communities in taxonomic composition and biomass and in the timing and fate of production. Total microbial biomass integrated throughout the ice depth declined during the season from a mean of 1150 mg C/m^2 on Nov. 17 to 628 mg C/m^2 by Dec. 22. In contrast, the biomass of the interior ice community increased during summer and was dominated by autotrophic forms <20 μm in length with a small dinoflagellate, *Gymnodinium* sp., becoming particularly abundant. Bacterial biomass varied by several orders of magnitude between ice depths, mainly due to the occurrence of an abundant population of large epiphytic bacteria in the bottom ice. (Auth. mod.)

50-5457

Nutrients, primary production and microbial heterotrophy in the southeastern Chukchi Sea: arctic summer nutrient depletion and heterotrophy.

Cota, G.F., et al, *Marine ecology progress series,* May 17, 1996, 135(1-3), p.247-258, 53 refs.

Marine biology, Pack ice, Ice edge, Biomass, Ecosystems, Microbiology, Nutrient cycle, Photosynthesis, Geochemistry, Ice cover effect, Seasonal variations, Sampling, Chukchi Sea

50-5458

Antarctic ice sheet melting in the southeast Pacific.

Jacobs, S.S., Hellmer, H.H., Jenkins, A., *Geophysical research letters,* May 1, 1996, 23(9), p.957-960, 19 refs.

Oceanography, Ice sheets, Ice shelves, Calving, Ice melting, Glacier mass balance, Ice water interface, Ocean currents, Antarctica—Amundsen Sea, Antarctica—Bellingshausen Sea

The first oceanographic measurements across a deep channel beneath the calving front of Pine Island Glacier reveal a sub-ice circulation driven by basal melting of 10-12 m/yr. The salt box model described here gives a melt rate similar to that of ice balance and numerical models, 5-50 times higher than averages for the George VI and Ross Ice Shelves. Melting is fueled by relatively warm Circumpolar Deep Water that floods the deep floor of the Amundsen and Bellingshausen Sea continental shelves, reaching the deep draft of this floating glacier. A revised melt rate for ice shelves in the Southeast Pacific sector raises circumpolar ice shelf melting to 756 Gt/yr. Given the prior estimates of surface accumulation and iceberg calving, this suggests that the Antarctic Ice Sheet is currently losing mass to the ocean. (Auth.)

50-5459

Postglacial rebound from VLBI geodesy: on establishing vertical reference.

Argus, D.F., *Geophysical research letters,* May 1, 1996, 23(9), p.973-976, 14 refs.

Tectonics, Isostasy, Subsidence, Ice sheets, Ice melting, Geodesy

50-5460

Physical adsorption model of the dependence of $ClONO_2$ heterogeneous reactions on relative humidity.

Henson, B.F., Wilson, K.R., Robinson, J.M., *Geophysical research letters,* May 1, 1996, 23(9), p.1021-1024, 26 refs.

Polar atmospheres, Polar stratospheric clouds, Aerosols, Simulation, Cloud physics, Cloud dissipation, Hydrates, Adsorption, Ice vapor interface, Ice sublimation

The authors present a model of polar stratospheric cloud heterogeneous reactivity based on physical adsorption that describes the observed relative humidity dependence of the $ClONO_2$ reaction probability with H_2O and HCl on sulfuric acid tetrahydrate ice surfaces (SAT) and with H_2O on nitric acid trihydrate (NAT). The laboratory data are modeled using only two parameters for a given system: the measured reaction probability on a neat H_2O ice surface, and a constant from the BET theory which describes the fraction of an acid hydrate surface covered by H_2O as a function of relative humidity. The model indicates that $ClONO_2$ reactivity with both HCl and H_2O on SAT and with H_2O on NAT is controlled by the surface coverage of H_2O. In contrast, the reaction of $ClONO_2$+HCl on NAT is better described by an alternative model based on reactivity in solutions formed within a porous ice by capillary liquid absorption. (Auth. mod.)

50-5461

$\delta^{18}O$ of atmospheric oxygen measured on the GRIP ice core document stratigraphic disturbances in the lowest 10% of the core.

Fuchs, A., Leuenberger, M.C., *Geophysical research letters,* May 1, 1996, 23(9), p.1049-1052, 29 refs.

Paleoclimatology, Climatic changes, Ice sheets, Ice cores, Stratigraphy, Isotope analysis, Oxygen isotopes, Ice dating, Geochronology, Greenland, Antarctica—Vostok Station

$\delta^{18}O$ measured on oxygen in the bubble air from ice cores is a proxy for continental ice volume and is used to synchronize cores from Greenland and Antarctica. A record measured on ice samples from the central Greenland deep ice core GRIP, spanning the Last Glacial Maximum and the Holocene, shows that $\delta^{18}O$ of atmospheric oxygen lags $\delta^{18}O$ of ice by about 4000 to 1000 years. The smooth isotope record of atmospheric oxygen shows a steady ice sheet decay beginning around 18,000 years BP, taking the time lag into account. However, measurements performed on ice from the GRIP core older than 100 kyr do not correlate with the corresponding Vostok record and show transitions too fast to be typical for ice sheet build-up or decay. (Auth. mod.)

50-5462

Comment on 'Stratospheric OClO measurements as a poor quantitative indicator of chlorine activation' by J. Sessler, M.P. Chipperfield, J.A. Pyle and R. Toumi.

Schiller, C., Wahner, A., Sessler, J., Chipperfield, M.P., Pyle, J.A., Toumi, R., *Geophysical research letters,* May 1, 1996, 23(9), p.1053-1055, 6 refs. For pertinent paper see 50-1521.

Polar atmospheres, Photochemical reactions, Stratosphere, Aerosols, Chemical properties, Turbulent diffusion

50-5463

Inositol 1,4,5-triphosphate formation in leaves of winter oilseed rape plants in response to freezing, tissue water potential and abscisic acid.

Smoleńska-Sym, G., Kacperska, A., *Physiologia plantarum,* Apr. 1996, 96(4), p.692-698, 29 refs.

Plant physiology, Plant tissues, Cold tolerance, Frost resistance, Acclimatization, Cold weather tests, Freezing, Ice formation, Temperature effects, Chemical analysis

50-5464

Stress interaction between multiple crevasses in glacier ice.

Sassolas, C., Pfeffer, T., Amadei, B., *Cold regions science and technology,* May 1996, 24(2), p.107-116, 29 refs.

Glaciology, Ice mechanics, Glacier flow, Rheology, Crevasses, Icebergs, Calving, Crack propagation, Shear stress, Stress concentration, Mathematical models, Boundary value problems

50-5465

Viscosity of fluidized snow.

Nishimura, K., *Cold regions science and technology,* May 1996, 24(2), p.117-127, 20 refs.

Snow mechanics, Viscosity, Viscous flow, Snow density, Mass transfer, Fluid dynamics, Snow air interface, Shear stress, Dynamic properties, Mechanical tests

50-5466

Simulation and observation of ice formation (freeze-over) in a lake.

Fang, X., Ellis, C.R., Stefan, H.G., *Cold regions science and technology,* May 1996, 24(2), p.129-145, 21 refs.

Lake ice, Ice formation, Ice forecasting, Freezeup, Air water interactions, Ice air interface, Water temperature, Profiles, Heat transfer, Thermal diffusion, Wind factors, Simulation, Mathematical models

50-5467

Snow and ice reflectance spectra of the Nansen Ice Sheet surfaces.

Zibordi, G., Meloni, G.P., Frezzotti, M., *Cold regions science and technology,* May 1996, 24(2), p.147-151, 14 refs.

Glaciology, Ice sheets, Lake ice, Optical properties, Ice optics, Snow optics, Surface structure, Classifications, Radiometry, Reflectivity, Spectra, Antarctica—Nansen Ice Sheet

Reflectance spectra of glacier ice, lake ice and snow taken over the Nansen Ice Sheet, Antarctica, are presented and discussed. Glacier and lake ice spectra show very similar shapes with a maximum in the visible and a strong decrease in the very near infrared. The generally lower reflectance of lake ice with respect to reflectance of glacier ice, and the decrease in reflectance of lake ice from the green to the blue, with respect to the almost flat reflectance of glacier ice in the same spectral region, appear to be the most significant features when discriminating between the two ice types. Snow spectra show a decrease in reflectance, more marked in the near infrared, with grain size increase. Shallow snowpacks, compared to semi-infinite snow packs, show an appreciable decrease in reflectance in the visible due to reflectance contribution of the underlying ice surface. (Auth.)

50-5468

Triaxial tests on crushed ice.

Singh, S.K., Jordaan, I.J., *Cold regions science and technology,* May 1996, 24(2), p.153-165, 21 refs.

Ice mechanics, Ice strength, Ice deformation, Ice solid interface, Porosity, Shear stress, Compaction, Compressive properties, Static loads, Ice breaking, Mechanical tests

50-5469

Preliminary results from fatigue tests on in situ sea ice beams.

Haskell, T.G., Robinson, W.H., Langhorne, P.J., *Cold regions science and technology,* May 1996, 24(2), p.167-176, 15 refs.

Sea ice, Ice mechanics, Mechanical properties, Ice deformation, Ice strength, Bearing strength, Cracking (fracturing), Tensile properties, Ice solid interface, Dynamic loads, Mechanical tests, Fatigue (materials), Antarctica—McMurdo Sound

Measurements of the fatigue characteristics of sea ice will give an indication of its possible failure mechanisms under repeated loading such as occurs with wave action and the operations of vehicles and aircraft. This paper presents the results of a series of fatigue experiments carried out in McMurdo Sound during the summer of 1992. The results presented here are in the form of a standard fatigue curve (with zero mean stress), that is stress amplitude versus number of cycles to failure, commonly known as an S-N curve. The endurance limit, that is the stress below which the sea-ice can withstand an unlimited number of cycles is, for sea ice *in situ*, approximately half the failure stress. (Auth. mod.)

50-5470

Effects of localized deformation on melting processes in ice.

Wilson, C.J.L., Zhang, Y., Stüwe, K., *Cold regions science and technology,* May 1996, 24(2), p.177-189, 29 refs.

Ice mechanics, Ice deformation, Ice melting, Ice heat flux, Shear strain, Plastic deformation, Penetration tests, Ice solid interface, Phase transformations, Ice microstructure, Dynamic loads, Mathematical models

50-5471

Electrical freezing potentials measured in a pingo growing in the western Canadian Arctic.

Parameswaran, V.R., Mackay, J.R., *Cold regions science and technology,* May 1996, 24(2), p.191-203, 36 refs.

Permafrost physics, Frozen ground mechanics, Permafrost transformation, Pingos, Soil freezing, Ice water interface, Freezing rate, Freezing front, Ion diffusion, Electrical resistivity, Polarization (charge separation), Electrical measurement, Probes

50-5472

Application of foam insulation for remediation of degraded permafrost.

Feklistov, V.N., Rusakov, N.L., *Cold regions science and technology,* May 1996, 24(2), p.205-212, 9 refs.

Permafrost preservation, Tundra soils, Permafrost transformation, Thermal regime, Thermal conductivity, Ground thawing, Degradation, Countermeasures, Insulation, Covering, Cellular plastics

50-5473

Ice fracture and spalling in ice-structure interaction.

Zou, B., Xiao, J., Jordaan, I.J., *Cold regions science and technology,* May 1996, 24(2), p.213-220, 22 refs.

Ice sheets, Ice mechanics, Ice solid interface, Fracture zones, Cracking (fracturing), Crack propagation, Shear stress, Brittleness, Tensile properties, Mathematical models

50-5474

Elasto-delayed-elastic simulation of short-term deflection of fresh-water ice covers.

Sinha, N.K., Cai, B.L., *Cold regions science and technology,* May 1996, 24(2), p.221-235, 38 refs.

Ice mechanics, Rheology, Ice sheets, Floating ice, Bearing strength, Ice deformation, Dynamic loads, Ice elasticity, Elastic properties, Ice models, Mathematical models

50-5475

Heat budget of a midlatitude squall line and implications for potential vorticity production.

Braun, S.A., Houze, R.A., Jr., *Journal of the atmospheric sciences,* May 1, 1996, 53(9), p.1217-1240, 58 refs.

Synoptic meteorology, Precipitation (meteorology), Cloud physics, Turbulent boundary layer, Convection, Wind direction, Heat flux, Heat balance, Ice formation, Ice melting, Freezing rate, Thermodynamics, Radar echoes, Mathematical models

50-5476

Comments on "The impact of the ice phase and radiation on a midlatitude squall system".

Braun, S.A., Houze, R.A., Jr., Yang, M.J., Chin, H.N.S., *Journal of the atmospheric sciences,* May 1, 1996, 53(9), p.1343-1354, 70 refs. Includes reply. For pertinent paper see 49-1975.

Precipitation (meteorology), Cloud physics, Turbulent boundary layer, Convection, Ice formation, Profiles, Thermodynamics, Wind factors

50-5477

Heat flux monitoring during cryogenic pipe freezing: a case study.

Tavner, A.C.R., Bowen, R.J., Bishop, C.W., *Chemical engineering research and design,* Mar. 1996, 74(A2), p.239-241, 2 refs.

Cryogenics, Water pipes, Pipeline freezing, Pipes (tubes), Sealing, Solidification, Heat flux, Fluid dynamics, Temperature measurement, Sensors

50-5478

Strength and yield criteria of frozen soil.

Ma, W., Wu, Z.W., Zhang, C.Q., *Progress in natural science,* Aug. 1995, 5(4), p.405-409, 9 refs. For other versions see 48-431 and 48-1417.

Frozen ground strength, Frozen ground mechanics, Ultimate strength, Shear strength, Stress concentration, Analysis (mathematics), Rheology, Temperature effects

50-5479

Long-term trend in sea ice thickness variation in the Arctic basin.

Nagurnyi, A.P., *Russian meteorology and hydrology,* 1995, No.6, p.39-42, Translated from Meteorologiia i gidrologiia. 11 refs.

Oceanography, Ice cover thickness, Periodic variations, Ice mechanics, Ice water interface, Gravity waves, Wave propagation, Oscillations, Resonance

50-5480

Thermodynamic modeling of the surface layer of a water body during ice formation and melting.

Dmitriev, N.V., *Russian meteorology and hydrology,* 1995, No.7, p.45-52, Translated from Meteorologiia i gidrologiia. 14 refs.

Surface waters, Hydrodynamics, Thermodynamics, Surface temperature, Lake ice, Ice melting, Ice formation, Seasonal freeze thaw, Heat flux, Ice water interface, Air ice water interaction, Turbulent exchange, Mathematical models

50-5481

Nutrients in the Aral Sea in winter.

Tsytsarin, A.G., *Russian meteorology and hydrology,* 1995, No.7, p.53-59, Translated from Meteorologiia i gidrologiia. 7 refs.

Oceanography, Sea ice, Ice cover effect, Ice water interface, Ice composition, Snow composition, Nutrient cycle, Water chemistry, Sampling, Hydrologic cycle, Geochemical cycles, Russia—Aral Sea

50-5482

Environmental conditions, composition, and seasonal rhythms of cryophilous meadows in the polar Urals.

Gorchakovskiĭ, P.L., Igosheva, N.I., *Russian journal of ecology,* May-June 1996, 27(4), p.172-176, Translated from Ekologiia. 8 refs.

Plant ecology, Phenology, Arctic landscapes, Tundra vegetation, Meadow soils, Ecosystems, Snow hydrology, Meltwater, Snow cover effect, Nivation, Vegetation patterns, Seasonal variations, Sampling, Russia—Ural Mountains

50-5483

Terrestrial component of the cryosphere.

Melnikov, P.A., et al, Intergovernmental Panel on Climate Change. Climate change 1992—supplementary report to the IPCC Impacts Assessment, Canberra, Australian Governmment Publishing Service, 1993, p.94-102, 33 refs.

Climatology, Global warming, Greenhouse effect, Climatic changes, Ice sheets, Permafrost transformation, Snow cover distribution, Snowmelt, Environmental impact, Remote sensing, Forecasting

50-5484

Radioactive contamination of the arctic region, Baltic Sea, and the Sea of Japan from activities in the former Soviet Union.

Bradley, D.J., Pacific Northwest Laboratory. Report No.8292, Richland, U.S. Department of Energy, Sep. 1992, 18p., 62 refs.

Oceanography, Radioactive wastes, Waste disposal, Water pollution, Environmental impact, Japan, Sea, Baltic Sea

50-5485
Slow-speed freezing of chemically unfixed biological tissues and long-term storage of frozen samples for cryoscanning electron microscopy.
Adler, K., Kruse, J., Kunze, G., *Microscopy research and technique,* Feb. 15, 1996, 33(3), p.262-265, 7 refs.
Cryobiology, Plant tissues, Freezing, Microstructure, Microanalysis, Cold storage, Laboratory techniques, Scanning electron microscopy, Cooling rate

50-5486
Landforms associated with a Loch Lomond Stadial glacier at Cronkley Scar, Teesdale, northern Pennines.
Wilson, P., Clark, R., *Yorkshire Geological Society. Proceedings,* Dec. 1995, 50(4), p.277-283, 38 refs.
Pleistocene, Glacial geology, Landforms, Quaternary deposits, Glacial deposits, Glacier ablation, Moraines, Talus, Geomorphology, Lithology, Blowing snow, United Kingdom—England

50-5487
Treeline fluctuations recorded for 12,500 years by soil profiles, pollen, and plant macrofossils in the central Swiss Alps.
Tinner, W., Ammann, B., Germann, P., *Arctic and alpine research,* May 1996, 28(2), p.131-147, 101 refs.
Pleistocene, Forest lines, Paleoecology, Alpine landscapes, Palynology, Classifications, Forest soils, Soil profiles, Vegetation patterns, Geochronology, Radioactive age determination, Switzerland—Alps

50-5488
Water fern (*Azolla filiculoides* Lam.) in southern Chile as an index of paleoenvironmment during early deglaciation.
Heusser, C.J., Denton, G.H., Hauser, A., Andersen, B.G., Lowell, T.V., *Arctic and alpine research,* May 1996, 28(2), p.148-155, 44 refs.
Pleistocene, Paleoclimatology, Climatic changes, Paleoecology, Vegetation patterns, Quaternary deposits, Glacial deposits, Fossils, Stratigraphy, Geochronology, Radioactive age determination, Glacier oscillation, Chile—Chilotan Archipelago

50-5489
Minimum area and cover-abundance scales as applied to polar desert vegetation.
Lévesque, E., *Arctic and alpine research,* May 1996, 28(2), p.156-162, 29 refs.
Plant ecology, Arctic landscapes, Deserts, Vegetation patterns, Classifications, Sampling, Statistical analysis, Canada—Northwest Territories—Ellesmere Island

50-5490
Natural revegetation on borrow pits and vehicle tracks in shrub tundra, 48 years following construction of the CANOL no.1 pipeline, N.W.T., Canada.
Harper, K.A., Kershaw, G.P., *Arctic and alpine research,* May 1996, 28(2), p.163-171, 33 refs.
Plant ecology, Revegetation, Tundra soils, Tundra vegetation, Vegetation patterns, Soil compaction, Damage, Sampling, Classifications, Canada—Northwest Territories

50-5491
Succession in the Hudson Bay lowland, northern Ontario, Canada.
Klinger, L.F., Short, S.K., *Arctic and alpine research,* May 1996, 28(2), p.172-183, 65 refs.
Paleoecology, Palynology, Quaternary deposits, Vegetation patterns, Revegetation, Wetlands, Peat, Littoral zone, Geobotanical interpretation, Sampling, Radioactive age determination, Canada—Ontario—Hudson Bay

50-5492
White spruce light rings in northwestern Canada.
Szeicz, J.M., *Arctic and alpine research,* May 1996, 28(2), p.184-189, 27 refs.
Paleoecology, Trees (plants), Growth, Coring, Subarctic landscapes, Tundra terrain, Tundra vegetation, Age determination, Climatic changes, Climatic factors, Canada—Yukon Territory, Canada—Northwest Territories

50-5493
Genetic diversity and ecotypic differentiation in arctic and alpine populations of *Polygonum viviparum.*
Bauert, M.R., *Arctic and alpine research,* May 1996, 28(2), p.190-195, 33 refs.
Plant ecology, Tundra vegetation, Sampling, Chemical analysis, Arctic landscapes, Alpine landscapes, Ecosystems, Classifications, Cold weather survival

50-5494
Micrometeorological impacts on insect activity and plant reproductive success in an alpine environment, Swedish Lapland.
Bergman, P., Molau, U., Holmgren, B., *Arctic and alpine research,* May 1996, 28(2), p.196-202, 45 refs.
Microclimatology, Alpine landscapes, Meteorological factors, Plant ecology, Phenology, Biomass, Growth, Ecosystems, Cold tolerance, Temperature effects, Statistical analysis, Sweden

50-5495
Tibetan alpine tundra responses to simulated changes in climate: aboveground biomass and community responses.
Zhang, Y.Q., Welker, J.M., *Arctic and alpine research,* May 1996, 28(2), p.203-209, 48 refs.
Climatology, Plant ecology, Grasses, Global warming, Greenhouse effect, Tundra climate, Tundra vegetation, Alpine landscapes, Ecosystems, Biomass, Growth, Simulation, Environmental tests, China—Tibet

50-5496
Two-year record of eolian sedimentation in the Wind River Range, Wyoming, U.S.A.
Dahms, D.E., Rawlins, C.L., *Arctic and alpine research,* May 1996, 28(2), p.210-216, 22 refs.
Climatology, Precipitation (meteorology), Alpine landscapes, Eolian soils, Dust, Sedimentation, Soil formation, Soil chemistry, Snow composition, Sampling, Seasonal variations, United States—Wyoming—Wind River Range

50-5497
Susceptibility of permafrost soils to deep thaw after forest fires in interior Alaska, U.S.A., and some ecologic implications.
Swanson, D.K., *Arctic and alpine research,* May 1996, 28(2), p.217-227, 39 refs.
Plant ecology, Ecosystems, Forest fires, Subarctic landscapes, Revegetation, Vegetation patterns, Sampling, Environmental impact, Permafrost transformation, Permafrost structure, Ground thawing, Topographic effects, Slope orientation, United States—Alaska—Brooks Range

50-5498
Turf-banked terraces in Öraefi, southeast Iceland: morphometry, rates of movement, and environmental controls.
Douglas, T.D., Harrison, S., *Arctic and alpine research,* May 1996, 28(2), p.228-236, 21 refs.
Geomorphology, Landforms, Subarctic landscapes, Terraces, Frost heave, Periglacial processes, Solifluction, Mass flow, Velocity measurement, Slope orientation, Wind factors, Iceland

50-5499
Seasonal and annual dynamics of frozen ground in the central highland of Iceland.
Thórhallsdóttir, T.E., *Arctic and alpine research,* May 1996, 28(2), p.237-243, 21 refs.
Permafrost distribution, Permafrost transformation, Frost mounds, Seasonal freeze thaw, Degradation, Subarctic landscapes, Frozen ground temperature, Active layer, Thaw depth, Sampling, Climatic factors, Iceland

50-5500
Field observations of sun crust formation in Hokkaido, Japan.
Ozeki, T., Akitaya, E., *Arctic and alpine research,* May 1996, 28(2), p.244-248, 8 refs.
Snow cover structure, Snow physics, Snow crust, Structural analysis, Ice crystal growth, Regelation, Snow air interface, Heat flux, Radiation absorption, Radiant cooling, Sampling, Japan—Hokkaido

50-5501
Volcanic eruption at a New Zealand ski resort prompts reevaluation of hazards.
Ruapehu Surveillance Group, *Eos,* May 14, 1996, 77(20), p.189-191, 7 refs.
Mountains, Geomorphology, Volcanoes, Volcanic ash, Slope stability, Explosion effects, Mudflows, Snow cover stability, Mass flow, Safety, New Zealand

50-5502
Underwater maintenance and inspection of CP systems (Cook Inlet, Alaska).
Daley, J.C., Ingraham, D., *Materials performance,* Jan. 1996, 35(1), p.23-27, 3 refs.
Offshore structures, Subsurface structures, Subsurface investigations, Electric equipment, Corrosion, Damage, Ice scoring, Maintenance, Detection, United States—Alaska—Cook Inlet

50-5503
Parallel-plate capacitor used to determine the complex permittivity of supercooled aqueous solutions in the 1 MHz range.
Wolter, F., Thom, F., *Measurement science & technology,* June 1996, 7(6), p.969-975, 18 refs.
Liquid cooling, Supercooling, Solutions, Dielectric properties, Electrical resistivity, Cryobiology, Ion diffusion, Freezing points, Ice formation, Electrical measurement, Measuring instruments, Temperature effects

50-5504
Spectropolarimetry of the 3 micron ice feature toward the Becklin-Neugebauer object.
Hough, J.H., Chrysostomou, A., Messinger, D.W., Whittet, D.C.B., Aitken, D.K., Roche, P.F., *Astrophysical journal,* Apr. 20, 1996, 461(2)pt.1, p.902-908, 26 refs.
Extraterrestrial ice, Cosmic dust, Electromagnetic properties, Ice detection, Ice optics, Ice spectroscopy, Infrared spectroscopy, Polarization (waves), Spectra

50-5505
Molecular dynamics simulation study of the anomalous thermal conductivity of clathrate hydrates.
Inoue, R., Tanaka, H., Nakanishi, K., *Journal of chemical physics,* June 15, 1996, 104(23), p.9569-9577, 23 refs.
Clathrates, Hydrates, Stability, Thermodynamic properties, Ice physics, Thermal conductivity, Molecular energy levels, Simulation, Vibration, Low frequencies, Mathematical models, Temperature effects

50-5506
Elastic constants of ice VI by Brillouin spectroscopy.
Tulk, C.A., Gagnon, R.E., Kiefte, H., Clouter, M.J., *Journal of chemical physics,* May 22, 1996, 104(20), p.7854-7859, 28 refs.
Ice physics, Ice elasticity, Ice spectroscopy, Ice crystal structure, Hydrogen bonds, Lasers, Light scattering, Spectra, High pressure tests

50-5507
Pedestrian slipping accidents and their prevention. [Jalankulkijoiden liukastumistapatumat ja niiden ehkäisy]
Kelkka, M., *Helsinki University of Technology. Highway Engineering. Report,* 1995, A44, 74p. + appends., In Finnish with English summary. 89 refs.
Road icing, Sidewalks, Skid resistance, Safety, Human factors engineering, Accidents, Cost analysis, Finland

50-5508
Cold climate hydrometeorology.
Upadhyay, D.S., New York, John Wiley & Sons, 1995, 345p., 38 refs. First published by New Age International (P) Limited, Publishers, New Delhi, India.
Snow hydrology, Snow air interface, Glacial hydrology, Glacial meteorology, Snowmelt, Water balance, Hydrologic cycle, Precipitation (meteorology), Flood forecasting, Avalanche forecasting, Himalaya Mountains

50-5509

Runoff modeling of a river basin with a debris-covered glacier in Langtang Valley, Nepal Himalaya.

Rana, B., Fukushima, Y., Ageta, Y., Nakawo, M., *Bulletin of glacier research,* May 1996, No.14, p.1-6, 21 refs.

Mountain glaciers, Glacier surveys, Glacier surfaces, Glacier ablation, Glacier melting, Glacial hydrology, Subglacial drainage, Meltwater, Runoff forecasting, Nepal

50-5510

Glaciological research in Hidden Valley, Mukut Himal in 1994.

Fujii, Y., Fujita, K., Paudyal, P., *Bulletin of glacier research,* May 1996, No.14, p.7-11, 7 refs.

Mountain glaciers, Glacier surveys, Glacier oscillation, Ice cores, Permafrost distribution, Frozen ground temperature, Global warming, Nepal

50-5511

Establishment of the GEN Automatic Weather Station (AWS) in Khumbu region, Nepal Himalayas.

Ueno, K., et al, *Bulletin of glacier research,* May 1996, No.14, p.13-22, 6 refs.

Glacier surveys, Glacial meteorology, Weather stations, Weather observations, Meteorological data, Nepal

50-5512

Annual air-temperature measurement and ablation estimate at Moreno Glacier, Patagonia.

Takeuchi, Y., Naruse, R., Skvarca, P., *Bulletin of glacier research,* May 1996, No.14, p.23-28, 18 refs.

Glacier surveys, Glacial meteorology, Glacier ablation, Glacier mass balance, Glacier heat balance, Ice air interface, Air temperature, Argentina—Patagonia

50-5513

Recent climate changes in southern Patagonia.

Ibarzabal y Donangelo, T., Hoffmann, J.A.J., Naruse, R., *Bulletin of glacier research,* May 1996, No.14, p.29-36, 15 refs.

Glacier surveys, Glacier oscillation, Glacial meteorology, Air temperature, Precipitation (meteorology), Climatic changes, Argentina—Patagonia

50-5514

Mass balance of Kangwura (flat-top) Glacier on the north side of Mt. Xixiabangma, China.

Liu, S.Y., Xie, Z.C., Song, G.P., Ma, L., Ageta, Y., *Bulletin of glacier research,* May 1996, No.14, p.37-43, 13 refs.

Mountain glaciers, Glacier surveys, Glacier mass balance, Glacier oscillation, Glacial meteorology, China—Xizang, Himalaya Mountains

50-5515

Contamination of groundwaters.

Adriano, D.C., ed, Iskandar, I.K., ed, Murarka, I.P., ed, MP 3830, Advances in environmental science, Northwood, Middlesex, Science Reviews, 1994, 525p., Numerous refs. passim.

Soil pollution, Ground water, Water pollution, Soil water migration, Soil chemistry

50-5516

Practical considerations for GRM refraction surveys in glacial terrains.

Kassenaar, D., Luttinger, J., Symposium on the Application of Geophysics to Engineering and Environmental Problems, San Diego, CA, Apr. 18-22, 1993 (SAGEEP '93). Proceedings. Vol.1, Englewood, CO, Environmental and Engineering Geophysical Society, 1993, p.355-371, 6 refs.

Site surveys, Geophysical surveys, Seismic surveys, Seismic refraction, Glacial geology, Glacial deposits, Engineering geology

50-5517

Fracturing of glacial drift and bedrock over longwall mine panels: integrated geophysical and hydrological measurements.

Johnston, M.A., Carpenter, P.J., Symposium on the Application of Geophysics to Engineering and Environmental Problems, San Diego, CA, Apr. 18-22, 1993 (SAGEEP '93). Proceedings. Vol.2, Englewood, CO, Environmental and Engineering Geophysical Society, 1993, p.395-414, 21 refs.

Mine shafts, Shaft sinking, Glacial geology, Glacial deposits, Bedrock, Rock mechanics, Geophysical surveys, Seismic surveys, Engineering geology

50-5518

Study of cryoseisms ("frostquakes") in the Sebago Lake region, Maine.

Allen, R.P., Symposium on the Application of Geophysics to Engineering and Environmental Problems, San Diego, CA, Apr. 18-22, 1993 (SAGEEP '93). Proceedings. Vol.2, Englewood, CO, Environmental and Engineering Geophysical Society, 1993, p.415-430, 4 refs.

Frozen ground mechanics, Frost shattering, Crack propagation, Icequakes, Acoustic measurement, United States—Maine

50-5519

Determination of the snowmelt rate and the meltwater outflow from a snowpack for modelling river runoff generation.

Kuchment, L.S., Gelfan, A.N., *Journal of hydrology,* May 1, 1996, 179(1-4), p.23-36, 15 refs.

Snow hydrology, River basins, Snowmelt, Meltwater, Snow water equivalent, Degree days, Hydrography, Flow measurement, Heat balance, Mathematical models, Runoff forecasting

50-5520

Spatial and temporal variability in southern ocean sea ice coverage.

Stammerjohn, S.E., Santa Barbara, University of California, Dec. 1993, 111p., Master's thesis. 98 refs.

Sea ice distribution, Oceanographic surveys, Ice surveys, Ice edge, Seasonal variations, Remote sensing, Radiometry, Spectra, Correlation, Antarctica—Weddell Sea, Antarctica—Ross Sea, Antarctica—Bellingshausen Sea, Antarctica—Amundsen Sea

Spatial and temporal variability in southern ocean sea ice coverage are analyzed from Oct. 1978 to Dec. 1991. Sea ice coverage is calculated from passive microwave satellite data, using Scanning Multi-Channel Microwave Radiometer (SMMR) and Special Sensor Microwave/Imager (SSM/I) data. Spatial variability in sea ice coverage was based on eight regions: southern ocean, Weddell, Indian, West Pacific, Ross, Amundsen and Bellingshausen regions, as well as a subregion of the Bellingshausen, the Long Term Ecological Research (LTER) study area located west of the Antarctic Peninsula. The six adjacent southern ocean regions all show unique interannual variability which is confirmed by cross spectral analysis of monthly anomalies, and no two regions have the same anomalous years of extreme maximum or minimum ice coverage. Regional interannual variability appears to be a yearly re-distribution of near constant ice coverage for the whole southern ocean, and in extreme high or low ice years there are asymmetries in southern ocean ice coverage. Spectral analysis of monthly anomalies confirmed that most of the variance in regional ice coverages is due to interannual variability. (Auth. mod.)

50-5521

Cool thermal discharges from ice melting with specified heat fluxes on the boundary.

Yeh, H.M., Ho, C.D., *Energy,* June 1996, 21(6), p.455-461, 12 refs.

Heat recovery, Air conditioning, Ice (water storage), Ice solid interface, Ice cover thickness, Ice melting, Thermal diffusion, Ice heat flux, Phase transformations, Mathematical models

50-5522

Stresses in sea ice in the neighboring force interaction zone.

Nikitin, V.A., Sukhorukov, K.K., *Russian meteorology and hydrology,* 1995, No.1, p.44-51, Translated from Meteorologiia i gidrologiia. 6 refs.

Sea ice, Ice cover strength, Ice mechanics, Rheology, Ice solid interface, Stress concentration, Ice deformation, Plastic deformation, Ice elasticity, Mechanical tests, Antarctica—Weddell Sea

This paper generalizes results from various experiments with loading (natural or artificial) of local ice volumes in field conditions, which permit a space-time separation of elastic and plastic ice deformation processes in the contact zone. Initial data included material gained from expeditions in the Gulf of Finland (Baltic Sea, 1981), Sakhalin Shelf (Sea of Okhotsk, 1989), Baidaratskaya Bay (Kara Sea, 1991), and also in Arctic (Arctic Ocean, 1980, 1990) and Antarctic (Weddell Sea, 1992) pack ice conditions. (Auth. mod.)

50-5523

Reduced meltwater outflow from the Laurentide ice margin during the Younger Dryas.

de Vernal, A., Hillaire-Marcel, C., Bilodeau, G., *Nature,* June 27, 1996, 381(6585), p.774-777, 28 refs.

Sea ice, Meltwater, Water temperature, Salinity, Canada—Saint Lawrence River, Canada—Saint Lawrence, Gulf

50-5524

Increased activity of northern vegetation inferred from atmospheric CO_2 measurements.

Keeling, C.D., Chin, J.F.S., Whorf, T.P., *Nature,* July 11, 1996, 382(6587), p.146-149, 21 refs.

Atmospheric composition, Carbon dioxide, Vegetation patterns, Growing season, United States—Alaska—Point Barrow, Canada—Northwest Territories—Alert

50-5525

Ice-edge hydrography between Elephant I. and the South Orkneys, summer 1988-1989. [Hidrografía al borde del hielo entre las islas Elefante y las Orcadas del Sur durante el verano austral 1988-1989]

Figueiras, F.G., Pérez, F.F., Actas del tercer Symposium Español de Estudios Antárticos, Gredos, 3 al 5 de octubre de 1989. (Spanish Symposium on Antarctic Studies, 3rd, Gredos, Oct. 3-5, 1989. Proceedings). Edited by J. Castellví, Madrid, Comisión Interministerial de Ciencia y Tecnología, 1990, p.9-23, In Spanish with English summary. 19 refs.

DLC G845.S93

Oceanographic surveys, Temperature measurement, Chemical composition, Ice edge, Plankton, Biomass, Antarctica—Weddell Sea, —Scotia Sea

During the austral summer of 1988-89 the RV *Professor Siedlecki* made an oceanographic cruise along the ice edge between Elephant I. and the South Orkneys. The intention was to test the hypothesis of various authors that the melting of the pack-ice is responsible for primary productivity in antarctic waters. The results obtained during this cruise show that, in the region studied, it is the convergence of Scotia Sea and Weddell Sea waters which is responsible for the necessary stability in the photic zone. The stability is generated by a series of surface meanders of the Antarctic Circumpolar Current, which allow phytoplankton biomass to accumulate in the contact zone with Weddell Sea water. It is concluded that this situation has a typical frontal structure, with phytoplankton patches in the convergence between two water masses. In these circumstances, the contribution of ice melting, if any, remains unclear. (Auth. mod.)

50-5526

Ozone and NO_2 observations within the antarctic polar vortex. [Observaciones de NO_2 y ozono en el interior del Vertice Polar Antártico]

Gil, M., Cacho, J., Acedo, L., Sainz de Aja, M.J., Actas del tercer Symposium Español de Estudios Antárticos, Gredos, 3 al 5 de octubre de 1989. (Spanish Symposium on Antarctic Studies, 3rd, Gredos, Oct. 3-5, 1989. Proceedings). Edited by J. Castellví, Madrid, Comisión Interministerial de Ciencia y Tecnología, 1990, p.135-147, In Spanish with English summary. Refs. p.139-140.

DLC G845.S93

Ozone, Stratosphere, Clouds (meteorology), Atmospheric circulation, Atmospheric composition, Meteorological data, Meteorological charts, Antarctica—Marambio Station

The denitrification observed in the polar vortex core during the antarctic spring is the result, according to the most accepted theory, of the conversion of nitrogen oxides to nitric acid. However, nitrogen dioxide measurements in the core of the vortex do not show the expected NO_2 build-up as result of the nitric acid photodissociation, suggesting that the atmosphere remains denitrified even a few months after the evaporation of the polar stratospheric clouds (PSC) takes place. These observations, carried out together with those of ozone in Oct. 1988 at Marambio Station, confirm the hypothesis first suggested by McElroy et al. (1988) of definite removal of at least 50% nitric acid contained in the PSCs by gravitational precipitation. It is also possible that nitric acid photodissociation for this latitude and date is slow enough not to allow a significant conversion to nitrogen oxides before the vortex breakdown. (Auth. mod.)

50-5527
Meteorological conditions of the antarctic ozone hole. [Condiciones meteorológicas del agujero del ozono en la Antártida]
Cisneros, J.M., Actas del tercer Symposium Español de Estudios Antárticos, Gredos, 3 al 5 de octubre de 1989. (Spanish Symposium on Antarctic Studies, 3rd, Gredos, Oct. 3-5, 1989. Proceedings). Edited by J. Castellví, Madrid, Comisión Interministerial de Ciencia y Tecnología, 1990, p.148-155, In Spanish with English summary. 14 refs.
DLC G845.S93
Ozone, Atmospheric circulation, Atmospheric composition, Air temperature, Stratosphere, Meteorological charts
It is argued that the phenomenon of ozone depletion in the lower stratosphere during the antarctic spring is caused by special meteorological conditions over Antarctica. The meteorological conditions of the antarctic stratosphere are described, as are the possible interactions occurring between them and atmospheric pollution leading to realimentation processes. It is suggested that this could explain the intensity of the phenomenon and the biennial oscillation that it seems to present. (Auth. mod.)

50-5528
Tests on the thermal behavior of steel in polar conditions (North Geographic Pole). [Experiencias térmicas realizadas sobre el comportamiento térmico del acero en condiciones polares (Polo Norte Geográfico)]
Aguirre-Puente, J., Ramos, M., Sanz, P.D., Sigot, A., Actas del tercer Symposium Español de Estudios Antárticos, Gredos, 3 al 5 de octubre de 1989. (Spanish Symposium on Antarctic Studies, 3rd, Gredos, Oct. 3-5, 1989. Proceedings). Edited by J. Castellví, Madrid, Comisión Interministerial de Ciencia y Tecnología, 1990, p.349-356, In Spanish with English summary. 6 refs.
DLC G845.S93
Low temperature research, Heat transmission, Mathematical models, Construction materials, Steels, Meteorological factors

50-5529
Interannual climate variability and snowpack in the western United States.
Cayan, D.R., *Journal of climate,* May 1996, 9(5), p.928-948, 44 refs.
Climatology, Snow accumulation, Mountains, Seasonal variations, Snow courses, Snow water equivalent, Surface temperature, Temperature variations, Runoff, Atmospheric circulation, Snow air interface, Correlation

50-5530
Precursory signals associated with the interannual variability of the Asian summer monsoon.
Yang, S., Lau, K.M., Sankar-Rao, M., *Journal of climate,* May 1996, 9(5), p.949-964, 26 refs.
Climatology, Precipitation (meteorology), Synoptic meteorology, Atmospheric circulation, Surface temperature, Seasonal variations, Snow water equivalent, Snow depth, Snow cover effect, Models

50-5531
Maintenance of the last great ice sheets: a UGAMP GCM study.
Hall, N.M.J., Valdes, P.J., Dong, B.W., *Journal of climate,* May 1996, 9(5), p.1004-1019, 31 refs.
Paleoclimatology, Ice sheets, Glacier oscillation, Synoptic meteorology, Snow accumulation, Atmospheric circulation, Wind direction, Moisture transfer, Mathematical models, Simulation
A 5-yr simulation of the last glacial maximum using the UGAMP General Circulation Model is presented. It has a full seasonal cycle, T42 resolution, and interactive land surface and sea ice. Boundary conditions of sea surface temperature, sea ice extent, and land ice elevation are taken from the CLIMAP dataset, and orbital parameters and carbon dioxide concentration are adjusted. It is compared with a 10-yr simulation of present-day climate using the same model. The results are analyzed in terms of processes leading to the maintenance of the atmospheric circulation and temperature structure, mid-latitude transient behavior, precipitation, and eventually accumulation of ice over the glaciers. The model responds in a similar manner to previous studies in global mean statistics but differs in its treatment of regional climates. Changes in sea ice and orography are equally important in determining the positions of the upper-level jets. The Atlantic jet and storm track in particular are much stronger than in the present-day simulation, and the associated distribution of precipitation and snowfall changes accordingly. Both major ice sheets are maintained by snowfall at the center and ablation at the edges at a reasonable rate through the annual cycle. (Auth. mod.)

50-5532
Assessment of global climate model simulations of arctic air temperatures.
Tao, X., Walsh, J.E., Chapman, W.L., *Journal of climate,* May 1996, 9(5), p.1060-1076, 29 refs.
Climatology, Polar atmospheres, Greenhouse effect, Air temperature, Surface temperature, Temperature variations, Albedo, Cloud cover, Snow cover effect, Ice cover effect, Simulation, Mathematical models, Seasonal variations

50-5533
Coastal morpho-stratigraphy and Holocene relative sea level changes at Tuapaat, southeastern Disko Island, central West Greenland.
Rasch, M., Nielsen, N., *Polar research,* Dec. 1995, 14(3), p.277-289, 34 refs.
Marine geology, Subpolar regions, Shores, Marine deposits, Quaternary deposits, Geomorphology, Stratigraphy, Radioactive age determination, Sea level, Periodic variations, Greenland—Disko Island

50-5534
Grenvillian U-Pb zircon ages of quartz porphyry and rhyolite clasts in a metaconglomerate at Vimsodden, southwestern Spitsbergen.
Balashov, IU.A., et al, *Polar research,* Dec. 1995, 14(3), p.291-302, 40 refs.
Subpolar regions, Pleistocene, Marine geology, Earth crust, Geologic structures, Lithology, Stratigraphy, Isotope analysis, Radioactive age determination, Geochronology, Norway—Spitsbergen

50-5535
Northern continuation of Caledonian high-pressure metamorphic rocks in central-western Spitsbergen.
Ohta, Y., Krasil'shchikov, A.A., Lepvrier, C., Teben'kov, A.M., *Polar research,* Dec. 1995, 14(3), p.303-315, 39 refs.
Tectonics, Pleistocene, Subpolar regions, Earth crust, Lithology, Stratigraphy, Magnetic anomalies, Geologic processes, Norway—Spitsbergen

50-5536
Using multiple data sources to enhance photogrammetry for mapping antarctic terrain.
Fox, A.J., *Polar research,* Dec. 1995, 14(3), p.317-327, 8 refs.
Photogrammetry, Geophysical surveys, Aerial surveys, Spaceborne photography, Geodetic surveys, Topographic maps, Sensor mapping, Data processing, Accuracy, Antarctica—Wright Peninsula
This paper shows, by reference to a new 1:50,000 scale topographic map of part of the Antarctic Peninsula, how merging topographic data from various sources in a GIS environment can make photogrammetric mapping more effective. Information sources used in the map compilation include three types of aerial photography, georeferenced satellite imagery, surveyed points in a control network and satellite image-derived control points. A shape-from-shading algorithm was used to generate contours for snowfields where absence of surface detail prevented photogrammetric contouring. A horizontal and vertical accuracy of better than ±5 m was achieved in orientation of photography covering almost all of the map area. Such small errors have allowed the construction of an accurate large-scale map for an area where previous mapping had been restricted to medium and small scales. (Auth. mod.)

50-5537
Holocene shoreline displacement in southernmost Spitsbergen.
Ziaja, W., Salvigsen, O., *Polar research,* Dec. 1995, 14(3), p.339-340, 6 refs.
Marine geology, Subpolar regions, Shoreline modification, Geomorphology, Terraces, Sea level, Quaternary deposits, Marine deposits, Radioactive age determination, Geochronology, Norway—Spitsbergen

50-5538
Use of remotely sensed data in the hydrological modelling of the upper Columbia watershed.
Kite, G.W., *Canadian journal of remote sensing,* Mar. 1996, 22(1), p.14-22, With French summary. 23 refs.
Snow hydrology, Watersheds, Landscape types, Classifications, LANDSAT, Radiometry, Remote sensing, Runoff, Stream flow, Snow cover distribution, Snow water equivalent, Simulation, Mathematical models, Canada—British Columbia—Columbia River

50-5539
Exploring the behaviour of microwaves in a snowpack using modelling techniques.
Leconte, R., *Canadian journal of remote sensing,* Mar. 1996, 22(1), p.23-35, With French summary. 36 refs.
Snow hydrology, Hydrologic cycle, Remote sensing, Synthetic aperture radar, Backscattering, Soil texture, Unfrozen water content, Snow density, Snow water equivalent, Simulation, Mathematical models, Snow cover effect

50-5540
Passive microwave snow research in the Canadian High Arctic.
Gan, T.Y., *Canadian journal of remote sensing,* Mar. 1996, 22(1), p.36-44, With French summary. 19 refs.
Snow surveys, Snow cover distribution, Snow water equivalent, Remote sensing, Microwaves, Radiometry, Brightness, Meteorological data, Models, Statistical analysis, Canada—Northwest Territories

50-5541
Classifying terrain in a muskeg-wetland regime for application to GRU-type distributed hydrologic models.
Pietroniro, A., Prowse, T.D., Lalonde, V., *Canadian journal of remote sensing,* Mar. 1996, 22(1), p.45-52, With French summary. 10 refs.
Hydrologic cycle, Runoff, Sensor mapping, LANDSAT, Discontinuous permafrost, Wetlands, Muskeg, River basins, Geophysical surveys, Terrain identification, Landscape types, Models

50-5542
Survey of snow cover by radar in the French Alps; application of a method developed in Québec. [Suivi du couvert nival par radar dans les Alpes françaises; application d'une approche développée au Québec]
Bernier, M., Dedieu, J.P., Fortin, J.P., *Canadian journal of remote sensing,* Mar. 1996, 22(1), p.53-64, In French with English summary. 23 refs.
Alpine landscapes, Snow cover distribution, Snow surveys, Classifications, Remote sensing, Radiometry, Synthetic aperture radar, Imaging, Backscattering, Snow water equivalent, Topographic effects, Snow cover effect, France—Alps

50-5543
Temporal analysis of ERS-1 SAR backscatter for hydrology applications.
Crevier, Y., Pultz, T.J., Lukowski, T.I., Toutin, T., *Canadian journal of remote sensing,* Mar. 1996, 22(1), p.65-76, With French summary. 43 refs.
Geophysical surveys, Hydrology, Wetlands, Synthetic aperture radar, Spaceborne photography, Backscattering, Landscape types, Surface properties, Snow depth, Frozen ground temperature, Data processing, Meteorological factors, Indexes (ratios)

50-5544
Rocky Mountain snowmelt on talus slopes by radar satellite.
Maxfield, A.W., *Canadian journal of remote sensing,* Mar. 1996, 22(1), p.77-94, With French summary. 13 refs.
Snow hydrology, Snow surveys, Talus, Spaceborne photography, Radiometry, Backscattering, Sensor mapping, Wet snow, Snowmelt, Backscattering, Topographic effects, Seasonal variations, Canada—Alberta—Rocky Mountains

50-5545
Mapping alpine snow and ice using Landsat TM and SAR imagery at Wapta icefield.
Brugman, M.M., Pietroniro, A., Shi, J.C., *Canadian journal of remote sensing,* Mar. 1996, 22(1), p.127-136, With French summary. 13 refs.
Alpine glaciation, Snow surveys, Glacier oscillation, Snow cover distribution, Glacier surfaces, Grain size, Synthetic aperture radar, LANDSAT, Spaceborne photography, Sensor mapping, Image processing, Canada—Alberta—Wapta Ice Field

50-5546

Stable isotopes as hydrologic tracers in South Cascade Glacier.

Vaughn, B.H., Boulder, University of Colorado, 1994, 143p., Master's thesis. Refs. p.118-124.

Glaciology, Glacial hydrology, Precipitation (meteorology), Hydrography, Subglacial drainage, Meltwater, Sampling, Electrical resistivity, Isotope analysis, Water transport, Stream flow, Computer programs

50-5547

Rowe Glacier—annual research report 1993.

Scott, R.B., Colorado. Rocky Mountain National Park. Report, Mar. 1994, 11p. + appends., 8 refs.

Glaciology, Glacier surveys, Glacier oscillation, Glacier ablation, Glacier surfaces, Snow accumulation, Seasonal variations, Photointerpretation, United States—Colorado—Rowe Glacier

50-5548

Evidences of paraglacial conditions in the Himalayan Quaternary valley-fill sequence of the Ravi River.

Marh, B.S., Tandon, S.K., Joshi, D.D., India: geomorphological diversity, Jaipur, India, Rawat Publications, 1994, p.117-125, 17 refs.

DLC GB438.I4I54 1994

Alpine glaciation, Glacial geology, Glacial erosion, Glacial deposits, Periglacial processes, Outwash, Alluvium, Mass movements (geology), Quaternary deposits, Himalaya Mountains

50-5549

Late Quaternary glacial and climatic history of the Liddar Valley, Kashmir Himalaya.

Kaul, M.N., India: geomorphological diversity, Jaipur, India, Rawat Publications, 1994, p.126-149, 16 refs.

DLC GB438.I4I54 1994

Alpine glaciation, Glacial geology, Glacial erosion, Glacial deposits, Glacier oscillation, Moraines, Stratigraphy, Paleobotany, Paleoclimatology, Kashmir

50-5550

Glacial and fluvial geomorphology of western Himalaya (Liddar Valley).

Kaul, M.N., New Delhi, Concept Publishing Company, 1990, 322p., Refs. p.301-317. Based on a Ph.D. thesis submitted to the Department of Geography, Panjab University, Chandigarh, India.

DLC GB438.I4K38 1990

Alpine glaciation, Glacial geology, Glacial erosion, Glacial deposits, Glacier mass balance, Glacier oscillation, Moraines, Outwash, Geomorphology, Paleoclimatology, Kashmir

50-5551

Proceedings.

Arctic and Marine Oilspill Program (AMOP) Technical Seminar, 19th, Calgary, Alberta, June 12-14, 1996, Ottawa, Environment Canada, Emergencies Science Division, 1996, 1635p. (2 vols.), Refs. passim. Title page in English and French. For selected papers see 50-5552 through 50-5570.

Oil spills, Oil recovery, Accidents, Water pollution, Soil pollution, Countermeasures, Waste disposal, Land reclamation, Environmental protection, Environmental impact, Ice cover effect

50-5552

Alyeska/SERVS technological innovations for oil spill response.

Hillman, S.O., Arctic and Marine Oilspill Program (AMOP) Technical Seminar, 19th, Calgary, Alberta, June 12-14, 1996. Proceedings. Vol.1, Ottawa, Environment Canada, Emergencies Science Division, 1996, p.223-236, 10 refs.

Oil spills, Oil recovery, Water pollution, Environmental protection, Waste disposal, Countermeasures, United States—Alaska—Prince William Sound

50-5553

Use of dispersants in broken ice.

Brown, H.M., Goodman, R.H., Arctic and Marine Oilspill Program (AMOP) Technical Seminar, 19th, Calgary, Alberta, June 12-14, 1996. Proceedings. Vol.1, Ottawa, Environment Canada, Emergencies Science Division, 1996, p.453-460, 6 refs.

Oil spills, Oil recovery, Ice water interface, Ice cover effect, Water pollution, Environmental protection, Countermeasures, Waste disposal, Surfactants

50-5554

Comparison of shoreline assessment study designs used for the *Exxon Valdez* oil spill.

Gilfillan, E.S., Harner, E.J., O'Reilly, J.E., Burns, W.A., Arctic and Marine Oilspill Program (AMOP) Technical Seminar, 19th, Calgary, Alberta, June 12-14, 1996. Proceedings. Vol.1, Ottawa, Environment Canada, Emergencies Science Division, 1996, p.615-629, 16 refs.

Oil spills, Accidents, Beaches, Water pollution, Soil pollution, Environmental impact, Marine biology, Statistical analysis, United States—Alaska—Prince William Sound

50-5555

***WinOil*: an oil spill model for Windows 95.**

McGillivray, D.G., Goodman, R.H., Cooper, C.K., Browne, D.R., Arctic and Marine Oilspill Program (AMOP) Technical Seminar, 19th, Calgary, Alberta, June 12-14, 1996. Proceedings. Vol.1, Ottawa, Environment Canada, Emergencies Science Division, 1996, p.821-832, 8 refs.

Oil spills, Oil recovery, Accidents, Ice conditions, Ice water interface, Ice cover effect, Water pollution, Environmental protection, Countermeasures, Computer programs, Environment simulation

50-5556

Oil spill risks for Copper River Delta in Alaska.

Christensen, F.T., Isaji, T., Anderson, E.L., Arctic and Marine Oilspill Program (AMOP) Technical Seminar, 19th, Calgary, Alberta, June 12-14, 1996. Proceedings. Vol.1, Ottawa, Environment Canada, Emergencies Science Division, 1996, p.833-846, 17 refs.

Oil spills, Oil recovery, Accidents, Water pollution, Ocean currents, Environmental impact, Environment simulation, Computerized simulation, United States—Alaska—Copper River Delta

50-5557

In-situ burning of crude oil and emulsions in broken ice.

Guénette, C.C., Wighus, R., Arctic and Marine Oilspill Program (AMOP) Technical Seminar, 19th, Calgary, Alberta, June 12-14, 1996. Proceedings. Vol.2, Ottawa, Environment Canada, Emergencies Science Division, 1996, p.895-906, 9 refs.

Oil spills, Water pollution, Ice water interface, Ice cover effect, Waste disposal, Countermeasures

50-5558

***In-situ* burning of Alaskan oils and emulsions: preliminary results of laboratory tests with and without waves.**

Buist, I., et al, Arctic and Marine Oilspill Program (AMOP) Technical Seminar, 19th, Calgary, Alberta, June 12-14, 1996. Proceedings. Vol.2, Ottawa, Environment Canada, Emergencies Science Division, 1996, p.1033-1061, 14 refs.

Oil spills, Water pollution, Surfactants, Ocean waves, Waste disposal, Countermeasures

50-5559

Comprehensive review of oil spill combustion studies.

Walavalkar, A.Y., Kulkarni, A.K., Arctic and Marine Oilspill Program (AMOP) Technical Seminar, 19th, Calgary, Alberta, June 12-14, 1996. Proceedings. Vol.2, Ottawa, Environment Canada, Emergencies Science Division, 1996, p.1081-1103, Refs. p.1097-1103.

Oil spills, Water pollution, Ice water interface, Ice cover effect, Waste disposal, Countermeasures

50-5560

Oil on shorelines and shoreline treatment: a state-of-knowledge review.

Owens, E.H., Sergy, G.A., Arctic and Marine Oilspill Program (AMOP) Technical Seminar, 19th, Calgary, Alberta, June 12-14, 1996. Proceedings. Vol.2, Ottawa, Environment Canada, Emergencies Science Division, 1996, p.1105-1116, 39 refs.

Oil spills, Oil recovery, Water pollution, Soil pollution, Beaches, Environmental impact, Land reclamation, Weathering

50-5561

Integrated approach to shoreline mapping for spill response planning.

Owens, E.H., LeBlanc, S.R., Percy, R.J., Arctic and Marine Oilspill Program (AMOP) Technical Seminar, 19th, Calgary, Alberta, June 12-14, 1996. Proceedings. Vol.2, Ottawa, Environment Canada, Emergencies Science Division, 1996, p.1145-1158, 7 refs.

Oil spills, Oil recovery, Water pollution, Soil pollution, Beaches, Land reclamation, Countermeasures, Mapping, Computerized simulation

50-5562

Management of shoreline protection and treatment operations.

Owens, E.H., Arctic and Marine Oilspill Program (AMOP) Technical Seminar, 19th, Calgary, Alberta, June 12-14, 1996. Proceedings. Vol.2, Ottawa, Environment Canada, Emergencies Science Division, 1996, p.1179-1193, 4 refs.

Oil spills, Oil recovery, Water pollution, Soil pollution, Beaches, Environmental protection, Land reclamation, Countermeasures

50-5563

Effects of the *Exxon Valdez* oil spill on the subtidal organic geochemistry of two bays in Prince William Sound, Alaska.

Page, D.S., Boehm, P.D., Gilfillan, E.S., Bence, A.E., Burns, W.A., Mankiewicz, P.J., Arctic and Marine Oilspill Program (AMOP) Technical Seminar, 19th, Calgary, Alberta, June 12-14, 1996. Proceedings. Vol.2, Ottawa, Environment Canada, Emergencies Science Division, 1996, p.1195-1209, 20 refs.

Oil spills, Accidents, Water pollution, Soil pollution, Bottom sediment, Environmental impact, Marine biology, United States—Alaska—Prince William Sound

50-5564

Upgrading the Laser Environmental Airborne Fluorosensor to provide a real-time response to oil spill emergencies.

Brown, C.E., Fruhwirth, M., Nelson, R., Fingas, M.F., Arctic and Marine Oilspill Program (AMOP) Technical Seminar, 19th, Calgary, Alberta, June 12-14, 1996. Proceedings. Vol.2, Ottawa, Environment Canada, Emergencies Science Division, 1996, p.1211-1220, 10 refs.

Oil spills, Water pollution, Aerial surveys, Lidar, Lasers, Computer applications

50-5565

Field test of waste oil combustion and empty drum cleaning at Alexandra Fiord, NWT.

McCourt, J., Ross, S., Buist, I., Morisson, J., Arctic and Marine Oilspill Program (AMOP) Technical Seminar, 19th, Calgary, Alberta, June 12-14, 1996. Proceedings. Vol.2, Ottawa, Environment Canada, Emergencies Science Division, 1996, p.1253-1265, 4 refs.

Oil spills, Soil pollution, Waste disposal, Environmental protection, Cold weather operation, Canada—Northwest Territories—Ellesmere Island

50-5566

Soil bioremediation at CFB Trenton: evaluation of bioremediation processes.

Ouellette, L., et al, Arctic and Marine Oilspill Program (AMOP) Technical Seminar, 19th, Calgary, Alberta, June 12-14, 1996. Proceedings. Vol.2, Ottawa, Environment Canada, Emergencies Science Division, 1996, p.1267-1278, 18 refs.

Oil spills, Soil pollution, Soil microbiology, Waste disposal, Land reclamation, Military facilities, Canada—Ontario

50-5567

Biofluffing—enhancing biological remediation of near-surface spills by augering.

Stehmeier, L., Ikeda-Cameron, K., Francis, M., Young, B., Arctic and Marine Oilspill Program (AMOP) Technical Seminar, 19th, Calgary, Alberta, June 12-14, 1996. Proceedings. Vol.2, Ottawa, Environment Canada, Emergencies Science Division, 1996, p.1283-1299, 8 refs.

Oil spills, Soil pollution, Soil microbiology, Glacial till, Waste disposal, Land reclamation, Canada—Alberta

50-5568

Overview of the Kolva River Basin 1995 Oil Recovery and Mitigation Project.

Hartley, A.E., Sr., Arctic and Marine Oilspill Program (AMOP) Technical Seminar, 19th, Calgary, Alberta, June 12-14, 1996. Proceedings. Vol.2, Ottawa, Environment Canada, Emergencies Science Division, 1996, p.1301-1307.

Pipelines, Oil spills, Floods, Accidents, River basins, Soil pollution, Water pollution, Oil recovery, Waste disposal, Land reclamation, Cold weather operation, Cost analysis, Russia—Komi

50-5569

Response operations on the Kolva River Basin 1995 Oil Recovery and Mitigation Project.

Stillings, W.I., Arctic and Marine Oilspill Program (AMOP) Technical Seminar, 19th, Calgary, Alberta, June 12-14, 1996. Proceedings. Vol.2, Ottawa, Environment Canada, Emergencies Science Division, 1996, p.1309-1319.

Pipelines, Oil spills, Oil recovery, Accidents, Soil pollution, Water pollution, Waste disposal, Land reclamation, Russia—Komi

50-5570

Stream-bank Cleanup Assessment Team (SCAT) survey techniques on the Kolva River Basin Oil Recovery and Mitigation Project.

Sienkiewicz, A.M., Owens, E.H., Arctic and Marine Oilspill Program (AMOP) Technical Seminar, 19th, Calgary, Alberta, June 12-14, 1996. Proceedings. Vol.2, Ottawa, Environment Canada, Emergencies Science Division, 1996, p.1321-1333.

Pipelines, Oil spills, Oil recovery, Accidents, Soil pollution, Water pollution, Environmental impact, Waste disposal, Land reclamation, Revegetation, Russia—Komi

50-5571

Selected aspects of the physical oceanography and particle fluxes in fjords of northern Norway.

Wassmann, P., Svendsen, H., Keck, A., Reigstad, M., *Journal of marine systems,* May 1996, 8(1-2), p.53-71, 57 refs.

Oceanography, Shores, Boundary layer, Ocean currents, Advection, Sedimentation, Mass transfer, Turbulent diffusion, Ecology, Plankton, Geochemistry, Norway

50-5572

Tectonic significance of alpine eclogites.

Spalla, M.I., Lardeaux, J.M., Dal Piaz, G.V., Gosso, G., Messiga, B., *Journal of geodynamics,* May 1996, 21(3), p.257-285, Refs. p.280-285.

Tectonics, Geological surveys, Pleistocene, Alpine landscapes, Earth crust, Geologic processes, Phase transformations, Rock properties, Thermal analysis

50-5573

Arctic research at San Diego State University. *Witness the Arctic,* 1996, p.1-4, 8 refs.

Organizations, Education, Research projects, Ecology, Environmental tests, Environmental protection, Global change, International cooperation

50-5574

Contaminants in the arctic marine environment: priorities for protection.

Macdonald, R.W., Bewers, J.M., *ICES journal of marine science,* June 1996, 53(3), p.537-563, Refs. p.558-563.

Oceanography, Water pollution, Air pollution, Hydrocarbons, Radioactive wastes, Ecosystems, Environmental impact, Ice cover effect, Environmental protection, Arctic Ocean

50-5575

Siberian company starts up modular refinery. *Oil & gas journal,* Mar. 18, 1996, 94(12), p.68,70.

Petroleum industry, Economic development, Crude oil, Cold weather operation, Modular construction, Design, Russia—Siberia

50-5576

Energy—water—mass balance and hydrological discharge.

Kang, E.S., *Zürcher geographische Schriften,* 1994, No.57, 178p., With German summary. Refs. p.164-170.

Glacial hydrology, Mountain glaciers, Watersheds, Glacier melting, Snowmelt, Meltwater, Subglacial drainage, Runoff, Water balance, Ice heat flux, Heat balance, Simulation, Mathematical models, Meteorological factors

50-5577

Application of relative-age dating techniques on rock glaciers of the La Sal Mountains, Utah: an interpretation of Holocene paleoclimates.

Nicholas, J.W., Butler, D.R., *Geografiska annaler,* 1996, 78A(1), p.1-18, 51 refs.

Pleistocene, Paleoclimatology, Glacial geology, Rock glaciers, Talus, Rock properties, Lichens, Age determination, Periglacial processes, Weathering, Geochronology, Correlation, United States—Utah—La Sal Mountains

50-5578

Geomorphic effects of the retreat of Jamapa Glacier, Pico de Orizaba Volcano (Mexico).

Palacios, D., Vázquez-Selem, L., *Geografiska annaler,* 1996, 78A(1), p.19-34, 27 refs.

Glacier oscillation, Glacial geology, Geomorphology, Volcanoes, Valleys, Mass flow, Landscape development, Talus, Rock glaciers, Periglacial processes, Thermal regime, Mexico—Jamapa Glacier

50-5579

Recent oscillations of the San Quintin and San Rafael glaciers, Patagonian Chile.

Winchester, V., Harrison, S., *Geografiska annaler,* 1996, 78A(1), p.35-49, 37 refs.

Glacier oscillation, Glacier ablation, Glacier mass balance, Glacier surveys, Moraines, Age determination, Periodic variations, Glacial meteorology, Climatic factors, Chile—Patagonia

50-5580

Temporal switching between englacial and subglacial drainage pathways: dye trace evidence from the Haut Glacier d'Arolla, Switzerland.

Nienow, P., Sharp, M., Willis, I., *Geografiska annaler,* 1996, 78A(1), p.51-60, 21 refs.

Mountain glaciers, Glacial hydrology, Meltwater, Subglacial drainage, Water transport, Glacier beds, Flow measurement, Topographic effects, Seasonal variations, Hydrogeochemistry, Switzerland—Haut Glacier d'Arolla

50-5581

Relict sorted patterned ground in Rostu, northernmost Sweden.

Kling, J., *Geografiska annaler,* 1996, 78A(1), p.61-72, 37 refs.

Geomorphology, Periglacial processes, Patterned ground, Stratification, Clay soils, Glacial geology, Physical properties, Sorting, Frost heave, Radioactive age determination, Sweden—Rostu

50-5582

Modelling of the thermal conditions at the Greenland ice sheet margin during Holocene deglaciation: boundary conditions for moraine formation.

Van Tatenhove, F.G.M., Huybrechts, P., *Geografiska annaler,* 1996, 78A(1), p.83-99, 52 refs.

Glacial geology, Glacier ablation, Ice sheets, Ice edge, Thermal regime, Landforms, Soil formation, Permafrost thickness, Bottom ice, Melting points, Moraines, Geomorphology, Thermal regime, Models, Greenland

50-5583

Interpretation of subglacially-deformed materials.

Benn, D.I., Evans, D.J.A., *Quaternary science reviews,* Jan. 1996, 15(1), p.23-52, Refs. p.49-52.

Pleistocene, Quaternary deposits, Glacial geology, Rheology, Subglacial drainage, Ice solid interface, Glacial deposits, Glacier beds, Strains, Deformation, Classifications

50-5584

Two-step deglaciation at the oxygen isotope stage 6/5E transition: the Zeifen-Kattegat climate oscillation.

Seidenkrantz, M.S., et al, *Quaternary science reviews,* Jan. 1996, 15(1), p.63-75, 70 refs.

Pleistocene, Paleoclimatology, Climatic changes, Ice cores, Glacier oscillation, Global warming, Quaternary deposits, Marine deposits, Stratigraphy, Isotope analysis, Geochronology

50-5585

Postglacial emergence of western Franz Josef Land, Russia, and retreat of the Barents Sea ice sheet.

Forman, S.L., et al, *Quaternary science reviews,* Jan. 1996, 15(1), p.77-90, 74 refs.

Pleistocene, Marine geology, Ice sheets, Glacier oscillation, Glacial geology, Sea level, Geomorphology, Marine deposits, Radioactive age determination, Isostasy, Barents Sea, Russia—Franz Josef Land

50-5586

Arctic not so costly and design ice loads falling.

Offshore engineer, Feb. 1990, p.12.

Petroleum industry, Exploration, Offshore drilling, Offshore structures, Ice loads, Design criteria, Cost analysis, Arctic Ocean

50-5587

Arctic pipeliners get to grips with scour. *Offshore engineer,* May 1990, p.48.

Offshore structures, Subsurface structures, Ice scoring, Pipe laying, Trenching, Protection, Arctic Ocean

50-5588

Arctic platform evacuation vehicle. *Offshore engineer,* June 1990, p.60.

Amphibious vehicles, Offshore structures, Petroleum industry, Safety, Rescue equipment, Performance, Hydraulic jets, Arctic Ocean

50-5589

Weather forecasting for aviation and marine operations in the Antarctic Peninsula region.

Wattam, S., Turner, J., *Meteorological applications,* Dec.1995, 2(4), p.323-332, 6 refs.

Weather forecasting, Remote sensing, Models, Antarctica—Antarctic Peninsula, Antarctica—Rothera Station, —Falkland Islands

An account is given of one austral summer's experience of forecasting for flying activities and marine operations around the Antarctic Peninsula. Data available included surface and upper-air observations, analyses and forecasts from the UK Meteorological Office global 19-level model and AVHRR satellite imagery. The numerical analyses and forecasts provided good guidance and correctly represented most of the synoptic-scale features. A number of mesoscale disturbances affected the central Peninsula area and the AVHRR

imagery was very valuable in allowing the development and track of these systems to be followed. The major problems were the absence of observations to the west of the Peninsula, the lack of radiosonde ascents from the Peninsula itself and the complexity of local wind systems as a result of the topography. Forecasting frontal activity over the ocean areas was also very difficult because of the unavailability of precipitation forecasts in the GRIB data. (Auth.)

50-5590

Geotechnical investigations of insulated permafrost slopes along the Norman Wells pipeline using ground penetrating radar.

Moorman, B.J., Judge, A.S., Burgess, M.M., Fridel, T.W., International Conference on Ground Penetrating Radar, 5th, Kitchener, Ontario, June 12-16, 1994 (GPR'94). Proceedings, Waterloo, Ontario, University. Waterloo Centre for Groundwater Research, [1994], p.477-491, 25 refs.

Underground pipelines, Permafrost beneath structures, Permafrost surveys, Permafrost thickness, Permafrost preservation, Thermal insulation, Thaw depth, Subsurface investigations, Electromagnetic prospecting, Radar echoes, Canada—Northwest Territories—Norman Wells

50-5591

Alkaline snow-melting agents containing chlorides and lime for pavements and roads.

Ekusa, K., Iwata, F., *Japan Patent Office. Patent,* Mar. 19, 1996, n.p., Citation only, no abstract.

Road icing, Chemical ice prevention, Salting, Liming, Snow removal, Road maintenance

50-5592

Comment on "Equation of state for extrapolation of high-pressure shock Hugoniot data".

Johnson, J.B., MP 3831, *Journal of applied physics,* Sep. 15, 1995, 78(6), p.4300-4302, 10 refs.

Shock waves, Wave propagation, Thermodynamics, Compressive properties, High pressure tests, Underwater acoustics, Mathematical models

Oh and Persson (1989) proposed an equation of state to extrapolate high-pressure shock Hugoniot data to other high-pressure and high-temperature states and compared it to data. The requirement that $F = -(dE/dV)_P/(dE/dV)_H = 1$ (E is specific internal energy, V is specific volume, P is the constant pressure path and H is the constant Hugoniot path) needed to establish the equation of state appears to be in error. The author has found F to vary from 0.16 to 3.59 for fifteen common materials of interest to shock physicists. Oh and Persson's (1989) comparison of their equation of state to data gives the impression of a better agreement than actually occurs because of possible errors in the transcription of data, and the use of an inappropriate Hugoniot for water. When data are correctly plotted and an appropriate water Hugoniot is used, the comparison of data with theory indicates that the equation of state loses accuracy with increasing pressure or decreasing porous initial density.

50-5593

Long-term plant persistence on highly acidic soils amended with organic materials in two climatic zones.

Palazzo, A.J., Lee, C.R., Price, R., MP 3832, International Symposium on Plant-Soil Interactions at Low pH, 3rd, Brisbane, Australia, Sep. 12-16, 1993, Dordrecht, Kluwer Academic Publishers, 1995, p.605-610, 15 refs.

Plant ecology, Plant physiology, Revegetation, Grasses, Soil chemistry, Soil pollution, Soil conservation, Land reclamation

Little information is available on long-term plant persistence and invasion on amended pyritic soils. This study evaluated the persistence of cool- and warm-season plants grown in two climatic zones on amended acidic soils (pH 3.0 or less) disturbed by large earth-moving operations in constructing or widening waterways. Soils in both studies were amended with lime and organic materials (sewage sludge at 100 t/ha or chicken manure at 80 t/ha), which increased pH and improved soil fertility. The results show that organic soil amendments are beneficial for establishing and maintaining a plant cover on highly acidic soils. The plants originally sown, however, did not always persist. The type of invading species depended on the kind of organic amendment applied. When chicken manure was applied, invading plants initially included weedy grasses and later included plants growing in adjacent plots and other perennial species; in the sludge site, plant invasion was primarily from adjacent study areas. In the warm-humid climate (Mississippi), serecia lespedeza was the most effective colonizer after four years, even without heavy applications of organic soil amendments. This plant later spread into areas sown to either bahiagrass or weeping lovegrass, which were not as persistent. Kentucky bluegrass was the most persistent species in the northern climate (Delaware) after seven years, with a mean soil cover of 81%. This species was followed by tall fescue at 53% and the cultivars of fine fescues at 22%. The ryegrasses and bentgrasses did not persist.

50-5594

Antarctic macroalgae—sources of volatile halogenated organic compounds.

Laturnus, F., Wiencke, C., Klöser, H., *Marine environmental research,* 1996, 41(2), p.169-181, 36 refs.

Polar atmospheres, Marine atmospheres, Atmospheric composition, Ozone, Air water interactions, Marine biology, Algae, Plant physiology, Nutrient cycle, Antarctica

50-5595

How terrain and road design affect winter maintenance on the Klondike Highway.

Tabler, R.D., Cavagnaro, E., Conference on Transportation Facilities through Difficult Terrain, Aspen-Snowmass, CO, Aug. 8-12, 1993. Proceedings. Edited by J.T.H. Wu and R.K. Barrett, Rotterdam, A.A. Balkema, 1993, p.501-510, WDCA 93000724, 15 refs.

Highway planning, Route surveys, Road maintenance, Snow removal, Canada—Yukon Territory, United States—Alaska—Skagway

50-5596

Wind events compared with polynya area estimates derived from SSM/I data.

Markus, T., Burns, B.A., EARSEL Workshop on Microwave Remote Sensing of Ice, Technical University of Denmark, Lyngby, June 7-9, 1993, Paris, European Association of Remote Sensing Laboratories, 1993, 21p. + figs., WDCA 93000627, 19 refs.

Ice surveys, Sea ice distribution, Ice conditions, Polynyas, Ice heat flux, Air ice water interaction, Wind factors, Spaceborne photography, Radiometry, Image processing, Antarctica—Weddell Sea

Different methods for estimating ice concentration as well as special polynya detection algorithms are applied to passive microwave data (here SSM/I) to determine the size of small coastal polynyas in the Weddell Sea region for Sep. 1989. The detection algorithms are 1- and 2-dimensional polynya signature models (PSM) based on generation of synthetic microwave images of polynya events. These models are compared with measured microwave data of the 37 GHz vertical polarization channel. The results from all methods are compared with wind data and model calculations of polynya size in a case study for a region close to Halley Bay. All passive microwave methods resolve single peaks in the history of the polynya size but differ significantly in absolute area measured and its fluctuation. The 2-D PSM, presented here for the first time, shows best correlation with wind data (Correlation Coefficient CC=0.78) and with the model (CC=0.80). It has a bias of 41 km^2 and an rms error of 173 km^2. This is acceptable, given the coarse resolution of approximately 625 km^2 for one SSM/I pixel.

50-5597

Distinct element modelling of seabed-ice rubble interaction.

Evgin, E., Zhan, C., Timco, G.W., Canadian Conference on Marine Geotechnical Engineering, 4th, St. John's, Newfoundland, 1993. Proceedings. Vol.3, Ottawa, National Research Council Canada, [1993], p.1165-1180, 25 refs.

Offshore structures, Artificial islands, Ocean bottom, Ice solid interface, Ice loads, Ice pressure, Ice friction, Ice pileup, Grounded ice, Ice cover strength, Computerized simulation

50-5598

Simulated transport of three cations through porous media: effect of different approaches to modeling cation exchange reactions.

Grant, S.A., Mansell, R.S., Bloom, S.A., Rhue, R.D., MP 3833, *Water resources research,* Jan. 1995, 31(1), p.185-198, 40 refs.

Hydrogeochemistry, Soil chemistry, Soil water migration, Ion exchange, Mathematical models, Computerized simulation

Batch cation exchange and column experiments were conducted to evaluate selectivity coefficients which have been suggested for describing cation exchange reactions in solute transport models. Vanselow selectivity coefficients were calculated for cation exchange equilibria with a cation resin and for equilibria reported in the literature with a Yolo loam soil. Experimental column data were compared with data from simulations generated by a numerical solute transport model to evaluate Vanselow, Gaines-Thomas, and statistical thermodynamic selectivity coefficients. With the cation resin, the statistical thermodynamic selectivity coefficient gave the most reliable estimate of column effluent cation concentrations. In a column packed with the Yolo loam soil, the Vanselow selectivity coefficient gave the most accurate prediction of column response. Use of variable rather than fixed Vanselow selectivity coefficients gave more accurate predictions of column experiments. The use of ternary cation exchange data did not improve predictions of column response.

50-5599

Hydrological processes contributing to nitrogen leaching from forested catchments in Nordic conditions.

Lepistö, A., *Boreal environment research. Monographs,* 1996, No.1, 72p., With Finnish summary. Refs. p.65-71.

Snow hydrology, Snowmelt, Snow cover effect, Scavenging, Forest ecosystems, Forest soils, Nutrient cycle, Leaching, Stream flow, Water pollution, Water chemistry, Finland, Sweden

50-5600

Polar research: U.S. policy and interests.

Mielke, J.E., *CRS report for Congress,* July 1, 1996, 96-582 SPR, 6p.

Research projects, Polar regions, Economics

Efforts to reduce the federal budget deficit have resulted in closer scrutiny of many programs and reexamination of U.S. policy interests. Polar research funding is one expression of U.S. policy that has not escaped this review. The United States has policy interests in both poles: in Antarctica to support the Antarctic Treaty in preserving the continent for peaceful purposes as a laboratory for scientific inquiry, protecting the environment, and fostering cooperative research; and in the Arctic for national security, rational development with minimal environmental or adverse social impact, and scientific research. These interests have developed over time through the course of events that led to their present expression in the U.S. Polar Programs of the National Science Foundation, and to the creation of the Interagency Arctic Research Policy Committee and the U.S. Arctic Research Commission. This report summarizes the development of U.S. research interests in the Arctic and Antarctic and reviews their current funding levels.

50-5601

Great lake under the ice.

Ellis-Evans, J.C., Wynn-Williams, D., *Nature,* June 20, 1996, 381(6584), p.644-646, 7 refs.

Lakes, Bacteria, Microbiology, Ice sheets, Antarctica—Vostok Station

This article and the article by C.R. Bentley included in it, both focus on different aspects of the work of the Kapitsa group in reexamining earlier investigations of the large sub-surface lake known as Lake Vostok. The startling conclusions of the size of the lake being comparable to Lake Ontario and in depth to that of Lake Baikal were quite unexpected. The fact of there being a large lake beneath the Vostok ice has raised numerous questions about what life forms were present and moving about, what sort of circulation moves and sustains these microbial forms, and what geochemical regime exists. In order not to disturb whatever is in the lake and to maintain its pristine nature it has been recommended that current drilling at Vostok be stopped at least 25 m above the lake surface.

50-5602

Water kept liquid by warmth from within.

Bentley, C.R., *Nature,* June 20, 1996, 381(6584), p.645.

Lakes, Ice sheets, Geothermal thawing, Gravity, Antarctica—Vostok Station

(See the abstract of Ellis-Evans, J.C., Great lake under the ice, *ibid.,* p.644).

50-5603

Fatigue criteria for asphalt pavements. Laboratory and field criteria. Committee 34. [Utmattningskriterier för asfaltbeläggningar. Lab- och fältkriterier. Utskott 34]

Wiman, L.G., ed, *Sweden. Väg- och transportforskningsinstitut. (Road and Transport Research Institute). VTI särtryck,* 1996, No.259, Var. p., In Swedish with some captions and sections in English. Refs. passim. Presented at a seminar in Arlanda, Sweden, Mar. 7, 1996.

Pavements, Bitumens, Strain tests, Fatigue (materials), Cold weather performance, Design criteria, Road maintenance

50-5604

Deposition of airborne metals around the lead-zinc mine in Maarmorilik monitored by lichens and mosses.

Pilegaard, K., *Meddelelser om Grønland. Bioscience,* 1994, No.43, 20p., 23 refs.

Subpolar regions, Air pollution, Aerosols, Metals, Mining, Lichens, Mosses, Sampling, Chemical analysis, Environmental impact, Environmental tests, Greenland—Maarmorilik

50-5605

Lidar observations of stratospheric temperature above McMurdo Station, Antarctica.

Di Donfrancesco, G., Adriani, A., Gobbi, G.P., Congeduti, F., *Journal of atmospheric and terrestrial physics,* Sep. 1996, 58(13), p.1391-1399, 21 refs.

Polar atmospheres, Climatology, Air temperature, Stratosphere, Sounding, Temperature measurement, Lidar, Seasonal variations, Antarctica—McMurdo Station

Stratospheric temperatures were measured by lidar at McMurdo Station during two late spring months (Sep.-Oct.) in 1991 and 1992, and during the period Mar.-Oct. in 1993 and 1994. The stratosphere was found to be quite active, with one major and several minor warmings occurring in 1993 and 1994, and showing the expected behavior of a distinct region of high temperatures, formed in the polar mesosphere, descending with time and warming the stratopause region. A relative maximum of the stratopause temperature was observed in July 1994, and differences between two years in terms of the time development of average temperature in the different stratospheric layers and in terms of the average temperature variability over single months are pointed out. Monthly mean temperature profiles determined from lidar observations are compared with a reference atmosphere. Fair agreement, with discrepancies less than ±4 K, in June, July and Aug. in the middle stratosphere and just above the stratopause was found. (Auth. mod.)

50-5606

Pu, ^{137}Cs and excess ^{210}Pb in Russian arctic sediments.

Baskaran, M., et al, *Earth and planetary science letters,* May 1996, 140(1-4), p.243-257, 40 refs.

Oceanography, Marine deposits, Radioactive wastes, Radioactive isotopes, Fallout, Water pollution, Geochemistry, Isotope analysis, Sampling, Environmental tests, Russia—Kara Sea

50-5607

Seasonal cycle of C_2-C_5 hydrocarbons over the Baltic Sea and northern Finland.

Laurila, T., Hakola, H., *Atmospheric environment,* May 1996, 30(10-11), International Global Atmospheric Chemistry Project Conference on Global Atmospheric Chemistry, 2nd, Fuji, Yoshida, Japan, Sep. 5-9, 1994, p.1597-1607, 32 refs.

Climatology, Polar atmospheres, Marine atmospheres, Aerosols, Atmospheric composition, Air pollution, Hydrocarbons, Sampling, Advection, Photochemical reactions, Seasonal variations, Environmental tests, Baltic Sea, Finland

50-5608

Sulfur hexafluoride—a powerful new atmospheric tracer.

Maiss, M., et al, *Atmospheric environment,* May 1996, 30(10-11), International Global Atmospheric Chemistry Project Conference on Global Atmospheric Chemistry, 2nd, Fuji, Yoshida, Japan, Sep. 5-9, 1994, p.1621-1629, 28 refs.

Polar atmospheres, Aerosols, Air pollution, Greenhouse effect, Global warming, Atmospheric composition, Atmospheric circulation, Turbulent exchange, Sampling, Periodic variations, Environmental tests, Canada—Northwest Territories—Alert, Antarctica—Georg von Neumayer Station

Long-term observations of the atmospheric trace gas sulfur hexafluoride (SF_6) at four background monitoring stations, Neumayer, Antarctica (1986-94), Cape Grim, Tasmania (1978-94), Izaña, Canary Is. (1991-94) and Alert, Canada, (1993-94) are presented. These data sets are supplemented by two meridional profiles collected over the Atlantic Ocean (1990 and 1993) and occasional observations at the regional site of Fraserdale, Canada (1994). Compared with data from Neumayer and Izaña reported earlier, measurements are updated for all sites until the end of 1994 and the precision has improved by more than a factor of 2. With the Cape Grim archived air samples, the atmospheric SF_6 chronology is extended by 8 more years back to 1978. The long-term trend and interhemispheric gradients are due to industrial production and emission. The chemical and biological inertness of SF_6 up to stratospheric conditions results in an atmospheric lifetime of more than 800 years and makes SF_6 a powerful tool for modeling transport processes in the atmosphere. (Auth. mod.)

50-5609

Atmospheric carbon emission from North Asian lakes: a factor of global significance.

Semiletov, I.P., et al, *Atmospheric environment,* May 1996, 30(10-11), International Global Atmospheric Chemistry Project Conference on Global Atmospheric Chemistry, 2nd, Fuji, Yoshida, Japan, Sep. 5-9, 1994, p.1657-1671, 43 refs.

Climatology, Climatic changes, Greenhouse effect, Subpolar regions, Lake water, Hydrogeochemistry, Air water interactions, Vapor transfer, Atmospheric composition, Aerosols, Hydrocarbons, Sampling, Environmental impact, Russia—Yakutia

50-5610

Influence of the growth mechanisms of snow particles on their chemical composition.

Takahashi, T., Endoh, T., Muramoto, K., Nakagawa, C., Noguchi, I., *Atmospheric environment,* May 1996, 30(10-11), International Global Atmospheric Chemistry Project Conference on Global Atmospheric Chemistry, 2nd, Fuji, Yoshida, Japan, Sep. 5-9, 1994, p.1683-1692, 9 refs.

Climatology, Precipitation (meteorology), Air pollution, Snow composition, Snow crystal growth, Snow crystal structure, Hoarfrost, Aerosols, Ice vapor interface, Sampling, Ion density (concentration)

50-5611

Sources and reaction pathways of dicarboxylic acids, ketoacids and dicarbonyls in arctic aerosols: one year of observations.

Kawamura, K., Kasukabe, H., Barrie, L.A., *Atmospheric environment,* May 1996, 30(10-11), International Global Atmospheric Chemistry Project Conference on Global Atmospheric Chemistry, 2nd, Fuji, Yoshida, Japan, Sep. 5-9, 1994, P.1709-1722, 31 refs.

Climatology, Polar atmospheres, Atmospheric composition, Air pollution, Aerosols, Hydrocarbons, Seasonal variations, Photochemical reactions, Sampling

50-5612

Seasonal variation of selected natural and anthropogenic halocarbons in the arctic troposphere.

Yokouchi, Y., Barrie, L.A., Toom, D., Akimoto, H., *Atmospheric environment,* May 1996, 30(10-11), International Global Atmospheric Chemistry Project Conference on Global Atmospheric Chemistry, 2nd, Fuji, Yoshida, Japan, Sep. 5-9, 1994, p.1723-1727, 16 refs.

Climatology, Polar atmospheres, Air pollution, Aerosols, Hydrocarbons, Sampling, Seasonal variations, Environmental tests

50-5613

Evolution of the Mt. Pinatubo aerosol over Antarctica inferred from SAGE II extinction measurements.

Anderson, J., Saxena, V.K., *Atmospheric environment,* May 1996, 30(10-11), International Global Atmospheric Chemistry Project Conference on Global Atmospheric Chemistry, 2nd, Fuji, Yoshida, Japan, Sep. 5-9, 1994, p.1797-1804, 21 refs.

Polar atmospheres, Stratosphere, Atmospheric composition, Aerosols, Mass transfer, Volcanic ash, Sampling, Particle size distribution, Statistical analysis, Seasonal variations

This study focuses on the evolution and stratospheric settling of the Mt. Pinatubo volcanic aerosol in the antarctic atmosphere. The volcanic aerosol characteristics are inferred from the Stratospheric Aerosol and Gas Expeiment (SAGE) II extinction measurements using a modified randomized minimization search technique between 13-30 km in the radii range between 0.10-0.80 μm. The temporal span of this study is between the date of eruption to early 1994 at latitudes poleward of 50°S. The 1991 eruption of Mt. Pinatubo resulted in the enhancement of the derived quantities with the existence of a large particle mode superimposed on the small background mode. This resulted in an order of magnitude increase in column number concentration, a 5-fold increase in column surface area, and greater than 20-fold increase in column mass loading during the austral summer of 1992. Effects of the polar vortex are observed during each austral spring since the eruption. Aerosol settling and decay in the presence of horizontal and vertical transport is observed during each austral spring. Column number concentrations have reverted to pre-eruption background levels whereas mass loading, surface area, and mean effective radius are still elevated as of early 1994. (Auth. mod.)

50-5614

Yearly cycle of lower tropospheric ozone at the Arctic Circle.

Rummukainen, M., Laurila, T., Kivi, R., *Atmospheric environment,* May 1996, 30(10-11), International Global Atmospheric Chemistry Project Conference on Global Atmospheric Chemistry, 2nd, Fuji, Yoshida, Japan, Sep. 5-9, 1994, p.1875-1885, 42 refs.

Climatology, Polar atmospheres, Atmospheric composition, Aerosols, Mass transfer, Atmospheric circulation, Ozone, Atmospheric boundary layer, Sampling, Seasonal variations, Statistical analysis, Advection, Finland—Lapland

50-5615

Dimethyl sulfide and its oxidation products in the atmosphere of the Atlantic and southern oceans.

Davison, B., et al, *Atmospheric environment,* May 1996, 30(10-11), International Global Atmospheric Chemistry Project Conference on Global Atmospheric Chemistry, 2nd, Fuji, Yoshida, Japan, Sep. 5-9, 1994, p.1895-1906, 47 refs.

Polar atmospheres, Climatology, Atmospheric composition, Aerosols, Sampling, Chemical analysis, Marine atmospheres, Air water interactions, Ion density (concentration), Mass transfer, Antarctica—Antarctic Peninsula, Antarctica—Weddell Sea

Dimethyl sulfide, methane sulfonate, non-sea-salt sulfate and sulfur dioxide concentrations in air were obtained during a cruise between the U.K. and the Antarctic during the period Oct. 1992-Jan. 1993. In equatorial regions the atmospheric DMS concentration ranged from 3 to 46 ng (S)/m^3 with an average of 18 ng (S)/m^3. In the polar waters and regions south of the Falklands concentrations from 3 to 714 ng (S)/m^3 were observed with a mean concentration of 73 ng (S)/m^3. Methane sulfonate concentrations were also enhanced in the vicinity of the Antarctic Peninsula and in the Weddell Sea. A simple model of DMS oxidation was used to estimate the ocean to atmosphere flux rate, and this was found to be within the range of previous estimates with a mean value of 1011 ng (S)/m^2/h. (Auth.)

50-5616

Studies on altitude and climatic environment in the middle and east parts of Tibetan Plateau during Quaternary maximum glaciation.

Shi, Y.F., Zheng, B.X., Li, S.J., Ye, B.S., *Journal of glaciology and geocryology,* June 1995, 17(2), p.97-112, In Chinese with English summary. 38 refs.

Glaciation, Glacial geology, Geological surveys, Glacial meteorology, Glacier oscillation, Glacier mass balance, Snow line, Pleistocene, Geochronology, Paleoclimatology, China—Qinghai-Xizang Plateau

50-5617

Glaciers and their fluctuations in Mt. Mungun-Tayga.

Xie, Z.C., Seliverstov, IU.P., Chistiakov, K.V., Moskalenko, M.G., *Journal of glaciology and geocryology,* June 1995, 17(2), p.113-119, In Chinese with English summary. 17 refs.

Mountain glaciers, Glacier surveys, Glacier oscillation, Glacier mass balance, Russia—Tuva

50-5618

Permafrost degeneration in the east of Tibetan Plateau.

Zhu, L.N., Wu, Z.W., Liu, Y.Z., *Journal of glaciology and geocryology,* June 1995, 17(2), p.120-124, In Chinese with English summary. 5 refs.

Permafrost surveys, Permafrost distribution, Permafrost indicators, Ground thawing, China—Qinghai-Xizang Plateau

50-5619

Relations between weather systems affecting Tibetan Plateau and oxygen isotope in precipitation.

Zhang, X.P., Yao, T.D., *Journal of glaciology and geocryology,* June 1995, 17(2), p.125-131, In Chinese with English summary. 11 refs.

Atmospheric circulation, Atmospheric composition, Precipitation (meteorology), Air temperature, Humidity, Vapor transfer, Oxygen isotopes, Isotope analysis, China—Qinghai-Xizang Plateau

50-5620

Vegetation and climatic changes in Zoige during the last 20,000 years determined by pollen records.

Liu, G.X., Shen, Y.P., Wang, R., Wang, S.M., *Journal of glaciology and geocryology,* June 1995, 17(2), p.132-137, In Chinese with English summary. 21 refs.

Paleobotany, Plant ecology, Vegetation patterns, Revegetation, Palynology, Paleoclimatology, China—Qinghai-Xizang Plateau

50-5621

Mass balance on the Dongkemadi and Meikuang glaciers in 1992/1993.

Pu, J.C., Yao, T.D., Zhang, Y.S., Seko, K., Fujita, K., *Journal of glaciology and geocryology,* June 1995, 17(2), p.138-143, In Chinese with English summary. 3 refs.

Mountain glaciers, Glacier surveys, Glacier oscillation, Glacier mass balance, China—Kunlun Mountains

50-5622

Some tensile creep characteristics of frozen loess.

Shen, Z.Y., Miao, L.N., Liu, Y.Z., *Journal of glaciology and geocryology,* June 1995, 17(2), p.144-151, In Chinese with English summary. 6 refs.

Frozen ground strength, Soil creep, Loess, Tensile properties, Mathematical models

50-5623

Analysis of microstructural changes in frozen sandy soil under confining pressures using scanning electronic microscope.

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Frozen ground strength, Frozen ground compression, Sands, Soil structure, Microstructure, Scanning electron microscopy

50-5624

Study of practicability of photoviscoelastic simulation test for frozen soil's creep.

Wang, T.D., Wu, J.J., Zhao, X.S., Wu, Z.W., Liu, Y.Z., *Journal of glaciology and geocryology,* June 1995, 17(2), p.159-163, In Chinese with English summary. 6 refs.

Frozen ground strength, Frozen ground mechanics, Soil creep, Soil tests, Viscoelasticity, Mathematical models

50-5625

Modeling test on the building with short piles and ventilating foundation in permafrost regions.

Zhu, L.N., Li, D.Q., Guo, X.M., Yu, C.Y., *Journal of glaciology and geocryology,* June 1995, 17(2), p.164-169, In Chinese with English summary. 5 refs.

Permafrost beneath structures, Permafrost preservation, Frozen ground strength, Buildings, Piles, Foundations, Ventilation, Cold weather construction, Environmental tests

50-5626

Response functions of tree-ring chronologies in western Tianshan Mountains.

Yuan, Y.J., Li, J.F., *Journal of glaciology and geocryology,* June 1995, 17(2), p.170-177, In Chinese with English summary. 1 ref.

Paleobotany, Plant ecology, Forest ecosystems, Phenology, Growth, Precipitation (meteorology), Desiccation, Geochronology, Paleoclimatology, China—Tian Shan

50-5627

Features of nivation landforms in the Changbaishan Mts.

Song, C.Q., Cui, Z.J., Liu, G.N., Zhu, C., *Journal of glaciology and geocryology,* June 1995, 17(2), p.178-183, In Chinese with English summary. 5 refs.

Nivation, Snow erosion, Altiplanation, Geomorphology, Topographic surveys, China—Jilin Province

50-5628

Permafrost distribution in the Dabanshan Pass section of Ning-Zhang Highway in eastern Qilian Mts.

Wang, S.L., Chen, X.B., Zhang, Z.Z., *Journal of glaciology and geocryology,* June 1995, 17(2), p.184-188, In Chinese with English summary. 1 ref.

Permafrost beneath roads, Permafrost surveys, Permafrost distribution, Permafrost thickness, Snowfall, Snow cover distribution, Air temperature, China—Qilian Mountains

50-5629

Rapid calculation of direct radiation on sloping fields.

Wang, J., Lu, A.X., Li, W.J., Tang, H., *Journal of glaciology and geocryology,* June 1995, 17(2), p.189-192, In Chinese with English summary. 5 refs.

Topographic surveys, Topographic effects, Terrain identification, Mapping, Slope orientation, Insolation, Solar radiation, Radiation balance, Glacial meteorology, Glacier heat balance, Glacier surfaces

50-5630

Glacier resources and distributive characteristics in the Central Asia Tianshan Mountains.

Liu, C.H., *Journal of glaciology and geocryology,* Sep. 1995, 17(3), p.193-203, In Chinese with English summary. 7 refs.

Mountain glaciers, Glacier surveys, Glacier surfaces, Glacier mass balance, Glacial hydrology, Glacier ice, Ice volume, Ice (water storage), Snow line, CIS—Central Asia, China—Tian Shan

50-5631

Pedogenic processes and evolution of the soils on moraines in alpine periglacial environments.

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Alpine glaciation, Periglacial processes, Moraines, Glacial till, Soil surveys, Mountain soils, Cryogenic soils, Clay soils, Soil formation, Soil composition, Soil dating, China—Tian Shan

50-5632

On ancient ice-sheet and ice age in the Tibetan Plateau.

Xu, D.M., Shen, Y.P., *Journal of glaciology and geocryology,* Sep. 1995, 17(3), p.213-229, In Chinese with English summary. 24 refs.

Glaciation, Ice sheets, Geological surveys, Glacial geology, Glacial erosion, Glacial deposits, Moraines, Quaternary deposits, Snow line, Pleistocene, Geochronology, Paleoclimatology, China—Qinghai-Xizang Plateau

50-5633

Study on the sequences of the Quaternary glaciations in the Bayan Har Mountains.

Zhou, S.Z., *Journal of glaciology and geocryology,* Sep. 1995, 17(3), p.230-240, In Chinese with English summary. 6 refs.

Alpine glaciation, Geological surveys, Glacial geology, Glacial erosion, Glacial deposits, Moraines, Glacial till, Pleistocene, Geochronology, Paleoclimatology, China—Qinghai Province

50-5634

Lake ice and its remote sensing monitoring in the Tibetan Plateau.

Chen, X.Z., Wang, G.Y., Li, W.J., Zeng, Q.Z., Jin, D.H., Wang, L.H., *Journal of glaciology and geocryology,* Sep. 1995, 17(3), p.241-246, In Chinese with English summary. 6 refs.

Frozen lakes, Lake ice, Ice surveys, Ice conditions, Ice cover thickness, Ice air interface, Air temperature, Radiometry, Radio echo soundings, Spaceborne photography, China—Qinghai-Xizang Plateau

50-5635

Vegetation and climate of Holocene megathermal in Zoige, northwestern Sichuan, China.

Liu, G.X., Shen, Y.P., Wang, S.M., *Journal of glaciology and geocryology,* Sep. 1995, 17(3), p.247-249, In Chinese with English summary. 13 refs.

Paleobotany, Plant ecology, Vegetation patterns, Revegetation, Palynology, Global warming, Paleoclimatology, China—Qinghai-Xizang Plateau

50-5636

Influence of temperature and pressure on cryogenic structure of freezing soil.

Wang, J.C., Xu, X.Z., Zhang, L.X., Wang, Y.J., *Journal of glaciology and geocryology,* Sep. 1995, 17(3), p.250-257, In Chinese with English summary. 5 refs.

Soil freezing, Frost heave, Cryogenic soils, Soil structure, Frozen ground thermodynamics, Frozen ground compression

50-5637

Unfrozen water content of soil containing NaCl relating to freezing-thawing processes.

Zhang, L.X., Xu, X.Z., Deng, Y.S., *Journal of glaciology and geocryology,* Sep. 1995, 17(3), p.258-262, In Chinese with English summary. 2 refs.

Saline soils, Soil freezing, Ground thawing, Frozen ground chemistry, Unfrozen water content

50-5638

Strength characteristics of frozen soil under torsional loading.

Peng, W.W., Zhang, J.M., Zhang, C.Q., Kang, G.J., Wang, Z.G., Peng, R., *Journal of glaciology and geocryology,* Sep. 1995, 17(3), p.263-267, In Chinese with English summary. 2 refs.

Frozen ground strength, Frozen ground compression, Loess, Soil tests, Strain tests, Tensile properties, Mathematical models

50-5639

Change trends of the mean annual air temperature in the last century in the South Shetland Island, Antarctica.

Han, J.K., Jin, H.J., Xu, C.H., Kang, J.C., Wen, J.H., *Journal of glaciology and geocryology,* Sep. 1995, 17(3), p.268-273, In Chinese with English summary. 6 refs.

Polar atmospheres, Air temperature, Surface temperature, Climatic changes, Weather stations, Meteorological data, Statistical analysis, Antarctica—South Shetland Islands

In this paper, the series of mean annual air temperature (MAAT) in the South Shetland Is. since 1904 were set up by correlation analysis of the data recorded at meteorological stations in the South Shetland Is. since 1944 and the Orcadas, a station with the longest continuous record in the Antarctic and subantarctic regions. Five-year moving average curves of the MAAT show that a 0.8°C warming started in the 1950s. The comparatively cold periods were in the middle of the 1910s-20s, the end of the 1920s, the end of the 1940s and the end of the 1950s; the warmer periods were the mid-1950s and 1980s. The MAAT in the 1980s was 2.2°C higher than that from 1904 to 1990. The largest amplitude in five years of the 1950s, when the temperature fluctuation was at its peak, was about 3.7°C. The authors also note 17 anomalies of the MAAT in the South Shetlands since 1904, and compare the calculated results with those measured at the Orcadas meteorologcial station.

50-5640

Study of snow stratigraphy and accumulation-rate change in the west part of the Lambert Glacier basin, East Antarctica.

Ren, J.W., Qin, D.H., Allison, I., Higham, M., Goodwin, I.D., *Journal of glaciology and geocryology,* Sep. 1995, 17(3), p.274-282, In Chinese with English summary. 16 refs.

Glacier surveys, Glacier alimentation, Glacier mass balance, Snow accumulation, Snow stratigraphy, Snow ice interface, Glacier ice, Firn stratification, Antarctica—Lambert Glacier

The Lambert Glacier Basin, over 10^6/km^2 in area, is a special region because of its distinct topography. A vast amount of stratigraphy observation of firn-core and snow-pit profiles indicates that the visible stratigraphic features are well preserved at relatively high accumulation sites. However, due to the effect of strong katabatic wind and microrelief, annual accumulation varies greatly over short distances, and as a result, several snow profiles or multi-year stake data are necessary for determination of the accumulation rate at a site. The derived accumulation rate series from comparison of stratigraphy, $\delta^{18}O$ and electric conductivity profiles were verified by the early measurement result at a higher accumulation site. In comparison with other regions such as Wilkes Land and Mizuho Plateau, the most notable characteristic in this region is that the accumulation rate is very low toward the coast, implying that the influence of local oceanic vapor and low air current is not important. The accumulation rate has an overall decrease trend over the past 50 years in this region, in contrast to the reported increase trend of recent decades for other regions in Antarctica. (Auth. mod.)

50-5641
Features of cations within glacier ice, snow and river water in the district of Xidatan Meikuang glacier.
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Glacier ice, Ice composition, Impurities, Scavenging, Snow composition, Snow impurities, Water pollution, Ion density (concentration)

50-5642
Future of oil and gas in northern Alaska.
Bird, K.J., Cole, F., Howell, D.G., Magoon, L.B., *U.S. Geological Survey. Circular,* 1995, No.1108, p.45-47, 7 refs.
Exploration, Petroleum industry, Oil recovery, Gas production, Economic development, Natural resources, Pipelines, United States—Alaska—North Slope

50-5643
Late Quaternary climatic fluctuations of the Venezuelan Andes.
Yuretich, R., ed, *University of Massachusetts, Amherst. Department of Geology and Geography. Contribution,* Feb. 1991, No.65, 158p., Refs. p.99-105.
DLC QC981.8.C5L38 1991
Alpine glaciation, Glacial lakes, Lacustrine deposits, Quaternary deposits, Limnology, Hydrogeochemistry, Soil dating, Paleoclimatology, Venezuela

50-5644
Shell to break Chukchi ice. *Offshore engineer,* Jan. 1989, p.15.
Offshore drilling, Oil wells, Exploration, Economic development, Chukchi Sea

50-5645
Picking out the pack ice from the air. *Offshore engineer,* Feb. 1989, p.28.
Sea ice distribution, Remote sensing, Radar echoes, Ice detection, Pack ice, Icebergs, Classifications, Aerial surveys

50-5646
Winter protection for unprepared steel. *Offshore engineer,* Mar. 1989, p.46.
Offshore structures, Steel structures, Corrosion, Protective coatings, Polymers, Cold weather tests

50-5647
Shallow blowout forces arctic respud. *Offshore engineer,* July 1989, p.16.
Offshore drilling, Oil wells, Natural gas, Bubbling, Vapor pressure, Countermeasures, Beaufort Sea

50-5648
Skimmers help clear Alaskan spillage. *Offshore engineer,* July 1989, p.57.
Crude oil, Sea water, Oil spills, Oil recovery, Portable equipment, Arctic Ocean

50-5649
Big freeze for model testing. *Offshore engineer,* Sep. 1989, p.111.
Offshore structures, Simulation, Research projects, Ice solid interface, Test equipment, Ice models

50-5650
Ice-breaking device frees structures. *Offshore engineer,* Nov. 1989, p.87, British Patent Appl. 2212452A.
Offshore structures, Ice removal, Equipment, Loading, Ice solid interface, Design

50-5651
Amauligak puts adrenalin back in the Beaufort.
Cottrill, A., *Offshore engineer,* Jan. 1986, p.16-17.
Hydrocarbons, Reservoirs, Offshore drilling, Exploration, Petroleum industry, Oil wells, Beaufort Sea

50-5652
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Offshore drilling, Oil wells, Petroleum industry, Meetings, Economic development, Arctic Ocean

50-5653
Arctic operators seek warmth in a cold climate.
Cottrill, A., *Offshore engineer,* Nov. 1986, p.20.
Petroleum industry, Offshore drilling, Hydrocarbons, Economic development, Exploration, Beaufort Sea, Bering Sea

50-5654
Canadians wrap-up arctic vessels. *Offshore engineer,* Dec. 1986, p.65.
Icebreakers, Corrosion, Protection, Countermeasures, Electric equipment, Electrical resistivity

50-5655
Abbreviated test report for the Corrective Action Verification Test (CAVT), Phase II, Special Evaluation, Family of Medium Tactical Vehicles (FMTV).
Storey, J.B., U.S. Army Test and Evaluation Command TECOM Project No.1-VG-120-MTV-022, Fort Greely, AK, U.S. Army Cold Regions Test Activity, June 1966, 11p. + appends., 5 refs.
Motor vehicles, All terrain vehicles, Engine starters, Military equipment, Cold weather tests

50-5656
List of publications, No.6, March 1996. [Publikasjonsoversikt]
Norsk Polarinstitutt (Norwegian Polar Institute), Oslo, 1996, 33p., In Norwegian and English. List of publications published by the Institute, 1922-1995, and their prices in Norwegian kroner.
Organizations, Research projects, Bibliographies

50-5657
Directory of United States arctic researchers: a preliminary compendium.
Galbraith, B., ed, Fairbanks, Arctic Research Consortium of the United States (ARCUS), Jan. 1996, Var. p.
Research projects, Organizations

50-5658
Modeling of ice thickness in manure pits. [Modélisation de l'épaisseur de glace dans les fosses à lisier]
Carrier, D., Godbout, S., Lemay, S.P., Marquis, A., Joncas, R., *Canadian agricultural engineering,* Oct./Nov./Dec. 1995, 37(4), p.327-333, In French with English summary. 26 refs.
Concrete structures, Concrete freezing, Storage tanks, Ice cover thickness, Ice growth, Ice loads, Ice pressure, Ice forecasting

50-5659
Low-temperature and freeze-thaw durability of thick composites.
Dutta, P.K., Hui, D., MP 3835, *Composites: Part B, Engineering,* 1996, 27B(3/4), p.371-379, 25 refs.
Composite materials, Polymers, Plastics, Frost resistance, Freeze thaw tests, Low temperature tests, Cold stress, Cold weather performance
Low temperature produces internal stresses in composites of polymeric materials. The polymeric matrix phase becomes stiffer, and may suffer from damage-inducing stresses resulting from thermal coefficient mismatch of fibers and resins. These influences have been studied by subjecting two types of FRP composites to flexural tests. A commercially procured fiber reinforced plastic (FRP) composite indeed produced cracks on prolonged thermal cycling between 50°C and -60°C temperatures. But a specially manufactured woven glass reinforced FRP did not produce any visual cracks for two and half times more thermal cycling over the same temperature range. It is suspected that the resin type and the curing process control the thermal cycle response and ultimate durability of such FRP composites in extreme temperature environments.

50-5660
Performance characterization of a laboratory-scale bioreactor with liquid suspensions of *Alcaligenes eutrophus* JMP134.
McKay, D.J., Morse, J.S., MP 3836, *Hazardous waste & hazardous materials,* 1995, 12(3), p.195-206, 30 refs.
Water pollution, Soil pollution, Soil microbiology, Soil chemistry, Waste treatment, Bacteria, Decomposition
Trichloroethylene (TCE) was degraded in a single-stage, continuously stirred tank reactor (CSTR) bioreactor containing pure cultures of liquid-dispersed *Alcaligenes eutrophus* JMP134. Phenol was supplied as the sole source of carbon and energy for induction of catabolic activities. Operating conditions were varied in a series of randomly ordered experiments. The independent variables were influent TCE concentration, influent phenol concentration, and hydraulic residence time. The dependent variable was the percent of influent TCE degraded or degradation efficiency. The highest degradation efficiency observed was 98.6%. An empirical equation was fitted to the data in the form of degradation efficiency as a function of the three independent variables. A close match was achieved between the equation and the data. This equation is valid only where the phenol is oxidized below the level of detection in the effluent (150 micro-g/L). The equation is useful for bioreactor design and operation.

50-5661
Frozen ground. *International Permafrost Association. News bulletin,* June 1996, No.19, 36p.
Research projects, Organizations, Meetings, Permafrost

50-5662
Evaluation of geocomposite edge drain on sand subgrade.
Raymond, G.P., Bathurst, R.J., Hajek, J., Geofilters '96, Montreal, May 1996. Proceedings, Montreal, École Polytechnique de Montréal, p.369-378, 6 refs.
Subgrade maintenance, Road maintenance, Geotextiles, Drains, Subsurface drainage, Waterproofing, Frost protection, Canada—Ontario

50-5663
Modeling frost heave of roads with a geotextile layer.
Konrad, J.M., Shen, M., Geofilters '96, Montreal, May 1996. Proceedings, Montreal, École Polytechnique de Montréal, p.533-542, 6 refs.
Subgrade soils, Soil freezing, Freezing front, Frost heave, Frost protection, Geotextiles, Road maintenance

50-5664
1995 annual report on Alaska's mineral resources.
Schneider, J.L., ed, *U.S. Geological Survey. Circular,* 1995, No.1127, 67p., Refs. p.56-64.
Exploration, Geological surveys, Minerals, Petroleum industry, Economic development, Natural resources, Cost analysis, United States—Alaska

50-5665
Final test report for the Production Qualification Test (PQT) of the High Mobility Multipurpose Wheeled Vehicle (HMMWV), Expanded Capacity Vehicle (ECV).
Davis, J.B., Swain, N.A., U.S. Army Test and Evaluation Command TECOM Project No.1-VG-120-HMV-086, Fort Greely, AK, U.S. Army Cold Regions Test Activity, June 1966, 31p. + appends., 19 refs.
Motor vehicles, All terrain vehicles, Engine starters, Defrosting, Military equipment, Cold weather tests

50-5666
Results of the millimeter-wave instrument operated at Sevilleta, New Mexico.
Otto, W.D., et al, MP 3837, *U.S. National Oceanic and Atmospheric Administration. Environmental Research Laboratories. Environmental Technology Laboratory. NOAA technical memorandum,* Feb. 1996, ERL ETL-262, 43p., 4 refs.
Soil air interface, Heat flux, Humidity, Atmospheric boundary layer, Atmospheric attenuation, Atmospheric density, Scintillation, Meteorological instruments
Values of the refractive structure parameter C^2_n are obtained from atmospheric scintillation by a 3.2-mm wavelength instrument. The results from this instrument are compared with those obtained from three other scintillometers and from C^2_n calculated from micrometeorological data.

50-5667
Pitorifices and small pumps in cold region water distribution systems.
Mauser, M.W., Fairbanks, University of Alaska, 1995, 273p., University Microfilms order No.9605716, Ph.D. thesis. Refs. p.253-273. Pitorifices, a combination of the terms "pitot tube" and "orifice", are scoops which project into the water main to divert flow through dual service lines so that water in the service lines is constantly replaced by warmer water to prevent freezing.
Water pipelines, Water supply, Utilities, Pipe flow, Water flow, Flow control, Pumps, Cold weather performance, Frost protection, Ice prevention

50-5668

Predicting the location of permafrost in central Yukon Territory.

Williams, D.J., 136p., M.A. thesis. Refs. p.127-136.

Discontinuous permafrost, Permafrost surveys, Permafrost distribution, Permafrost indicators, Permafrost forecasting, Computerized simulation, Statistical analysis, Canada—Yukon Territory

50-5669

Hybrid model for predicting permafrost occurrence and thickness.

Wright, J.F., Ottawa, Carleton University, 1995, 92p., M.A. thesis. 37 refs.

Permafrost distribution, Permafrost thickness, Permafrost forecasting, Permafrost heat balance, Global warming, Computer programs

50-5670

Simulation of ship-ice collision dynamics.

Phillips, L.D., University of Ottawa, 1994, 201p., Ph.D. thesis. Refs. p.189-201.

Ships, Ice solid interface, Ice navigation, Ice loads, Ice pressure, Metal ice friction, Ice cover strength, Ice models, Computer programs

50-5671

Disorder of organizational logic—makework among members of bureaucratic organizations.

Masuch, M., LaPotin, P.J., MP 3838, Logic of organizational disorder, Berlin, Walter de Gruyter & Co., 1996, p.145-162, 48 refs.

Organizations, Human factors, Labor factors

50-5672

Sampling trace-level organics with polymeric tubings.

Parker, L.V., Ranney, T.A., SR 96-03, *U.S. Army Cold Regions Research and Engineering Laboratory. Special report,* Feb. 1996, 31p., ADA-309 086, 30 refs.

Pipes (tubes), Plastics, Leaching, Ground water

There is concern whether tubings used to sample groundwater can affect contaminant concentrations. Tubings might sorb contaminants, thereby giving falsely low values, or they might leach contaminants, thereby giving falsely high values. There also is concern that a tubing used previously in a well with high concentrations of contaminants might subsequently desorb contaminants into samples taken from other wells if decontamination is insufficient. The review of the literature indicated that these concerns are valid, although a comprehensive study of this subject does not exist. In the laboratory study, the authors looked for sorption of a suite of organic solutes by 20 polymeric tubings under static conditions. Seven of these tubings were flexible and the others were rigid. The authors found that among the rigid tubings tested, the three fluoropolymers (fluorinated ethlyene propylene [FEP], FEP-lined polyethylene, and polyvinylidene fluoride [PVDF]) were the least sorptive tubings. However, even these tubings readily sorbed some of the analytes. Among the flexible tubings tested, a fluoroelastomer tubing and a tubing made of a copolymer of vinylidene fluoride and hexafluoropropylene (P[VDF-HFP]) were the least sorptive. It was also found that several of the 20 tubings appeared to leach constituents into the test solution. The authors were unable to detect any evidence that constituents leached from the polyethylene tubings, the rigid fluoropolymer tubings, and one of the plasticized polypropylene tubings. Currently, studies are under way to see whether the effects observed in this study increase, decrease, or remain the same under dynamic conditions.

50-5673

Model ice properties.

Zufelt, J.E., Ettema, R., CR 96-01, *U.S. Army Cold Regions Research and Engineering Laboratory. Report,* Feb. 1996, 19p., ADA-308 767, 35 refs.

Ice models, Ice physics, Ice jams, Ice strength

Physical modeling is often used to study complex ice processes when analytical formulations or numerical simulations fall short. Judicious choice and use of materials to model the ice in scaled experiments require knowledge of the properties of the material as well as an understanding of the dominant forces governing the process to be modeled. This report describes general similitude requirements for various modeling situations and the properties of several previous and currently used model ice materials.

50-5674

Structure and dynamics of the plant cover of flat hummocky bogs in the Nadym-Pur interfluve in the West Siberian plain. [Stroenie i dinamika rastitel'nogo pokrova ploskobugristykh bolot Nadym-Purskogo mezhdurech'ia Zapadno-Sibirskoĭ ravniny]

Kirpotin, S.N., Vorob'ev, S.N., Khmyz, V.F., Guzynin, T.V., Skoblikov, S.A., IAkovlev, A.E., *Botanicheskii zhurnal,* Aug. 1995, 80(8), p.29-39, In Russian with English summary. 21 refs.

Swamps, Tundra vegetation, Vegetation patterns, Russia—Siberia, Russia—Nadym River, Russia—Pur River

50-5675

Formation of multiplex lamellae by equilibrium slow freezing of cortical parenchyma cells of mulberry and its possible relationship to freezing tolerance.

Fujikawa, S., Takabe, K., *Protoplasma,* 1996, 190(3-4), p.189-203, 53 refs.

Plant physiology, Cold tolerance, Frost resistance, Plant tissues, Freezing points, Microstructure, Structural analysis, Acclimatization, Cryobiology, Scanning electron microscopy

50-5676

Radioecological hazard of ship nuclear reactors sunken in the Arctic.

Sivintsev, IU.V., Kiknadze, O.E., *Atomic energy,* Mar. 1996, 79(3), p.612-618, Translated from Atomnaia energiia. 15 refs.

Oceanography, Water pollution, Radioactive wastes, Radioactivity, Radioactive isotopes, Indexes (ratios), Icebreakers, Submarines, Accidents, Ecology, Environmental impact, Models, Arctic Ocean

50-5677

Ecology of diatom and bacterial assemblages in water associated with melting summer sea ice in the Weddell Sea, Antarctica.

Gleitz, M., Grossmann, S., Scharek, R., Smetacek, V., *Antarctic science,* June 1996, 8(2), p.135-146, Refs. p.144-146.

Sea ice, Ice cover effect, Algae, Biomass, Microbiology, Antarctica—Weddell Sea

The fate of ice biota released via meltwater into pools of seawater trapped between melting ice floes (crack pools) was followed in late Jan. in the southern Weddell Sea. Low-salinity crack pools shared the following features: nitrate exhaustion, high pH and POC/PON ratios, high bacterial biomass composed of large cells, and a dense algal assemblage dominated to over 90% by only two diatom species. It is suggested that this "climax stage" evolved from a nutrient rich, moderate biomass situation prevailing in high salinity crack pools, and is representative of summer succession of sea ice biota. "Overflow" production following nitrate exhaustion by the algae resulted in internal (lipid) and external (presumably mucus) carbon pools. The latter must fuel bacterial biomass build-up, as algal mortality appeared to be low. The large algal and bacterial stocks point to low grazing pressure exerted by phagotrophic protists, presumably due to poor food quality and/or excessive mucus production. It is concluded that environmental selection of the abundant ice algal species occurs under conditions prevailing in the disintegrating ice cover during summer, which differ drastically from those generally referred to as characteristic of the sea ice habitat at large, i.e. a combination of low temperature, low light and high salinity. (Auth.)

50-5678

Atmospheric surface pressure over the interior of Antarctica.

Radok, U., Allison, I., Wendler, G., *Antarctic science,* June 1996, 8(2), p.209-217, 17 refs.

Ice sheets, Atmospheric pressure, Weather stations, Atmospheric circulation, Climatic factors, Ice air interface, Antarctica—East Antarctica

Atmospheric surface pressures on the East Antarctic Ice Sheet are examined as a contribution to a new regional climatology based on automatic weather stations (AWS). Monthly mean pressures along two meridional AWS lines show near the coast a semi-annual oscillation with equinoctial minima, which become submerged inland under a larger annual oscillation, asymmetrically shaped around a summer solstice peak. Such a peak could arise when air surrounding the ice sheet is heated and enabled to spread out over the ice. This concept has provided a classical prediction of the ice sheet's mean elevation; in this paper the theory is expressed in a more modern form. After the summer "flood" the vertical tropospheric circulation driving the progressive katabatic surface layer, drainage from the ice sheet should create relatively higher pressures below the convergence region over the ice sheet center and lower pressures near the coast. Below the surface inversion along the sloping ice sheet surface the hydrostatic balance is shown to be governed by temperatures higher than observed at the surface. (Auth. mod.)

50-5679

Direct measurements of atmospheric ozone at Zhongshan Station, Antarctica.

Kong, Q.X., Liu, G.R., Wang, G.C., *Antarctic research (Chinese edition),* 1996, 8(1), p.59-64, In Chinese with English summary. 6 refs.

Ozone, Meteorological instruments, Data processing, Antarctica—Zhongshan Station

Vertical ozone profile measurements were performed with balloon-borne electrochemical ozonesondes launched at Zhongshan Station during Apr.-Nov., 1993. An atmospheric ozone measurement system being developed jointly by IAP and CSSAR Academia Sinica consists of a balloon-borne ozonesonde, ground receiving system and data processing system. In this paper, the authors describe the performance of this system and present some of its measured results. (Auth.)

50-5680

Chemical composition analysis of antarctic ice and snow: a comparison between capillary ion analysis and ion chromatography.

Liu, L.B., Kang, J.C., Wen, J.H., Wang, D.L., *Antarctic research (Chinese edition),* 1996, 8(1), p.65-72, In Chinese with English summary. 25 refs.

Chemical analysis, Ice composition, Snow composition

In contrast to traditional ion chromatography (IC), an advanced analysis technology, capillary ion analysis (CIA) is discussed. The method has many advantages such as rapid analysis, high resolution, good separation, simple sample treatment, less volume of sample and convenient maintenance. It is suggested that CIA will play an important role in the analysis of antarctic ice and snow, replacing the IC method usually used in the field at present. (Auth. mod.)

50-5681

Community analysis of the bacterial assemblages in the winter cover and pelagic layers of a high mountain lake by in situ hybridization.

Alfreider, A., et al, *Applied and environmental microbiology,* June 1996, 62(6), p.2138-2144, 45 refs.

Limnology, Microbiology, Lake water, Bacteria, Plant physiology, Ecosystems, Biomass, Probes, Sampling, Slush, Snow composition, Classifications, Snow cover effect

50-5682

High-pressure Brillouin scattering and elastic properties of liquid and solid methane.

Shimizu, H., Nakashima, N., Sasaki, S., *Physical review B,* Jan. 1, 1996, 53(1), p.111-115, 19 refs.

Hydrocarbons, Natural gas, Frozen liquids, High pressure tests, Spectroscopy, Light scattering, Spectra, Elastic properties, Refractivity, Extraterrestrial ice, Simulation

50-5683

Precipitation retrieval from spaceborne microwave radiometers based on maximum *a posteriori* probability estimation.

Pierdicca, N., Marzano, F.S., d'Auria, G., Basili, P., Ciotti, P., Mugnai, A., *IEEE transactions on geoscience and remote sensing,* July 1996, 34(4), p.831-846, 33 refs.

Clouds (meteorology), Precipitation (meteorology), Cloud physics, Water content, Remote sensing, Radiometry, Classifications, Brightness, Snow pellets, Ice crystal optics, Radiation balance, Data processing, Statistical analysis

50-5684

Time-varying ice crystal orientation in thunderstorms observed with multiparameter radar.

Caylor, I.J., Chandrasekar, V., *IEEE transactions on geoscience and remote sensing,* July 1996, 34(4), p.847-858, 35 refs.

Precipitation (meteorology), Thunderstorms, Cloud physics, Cloud electrification, Electric fields, Ice detection, Ice crystal optics, Orientation, Particle size distribution, Radar echoes, Scattering, Polarization (waves)

50-5685

Universal multifractal scaling of synthetic aperture radar images of sea-ice.

Falco, T., Francis, F., Lovejoy, S., Schertzer, D., Kerman, B., Drinkwater, M., *IEEE transactions on geoscience and remote sensing,* July 1996, 34(4), p.906-914, 43 refs.

Spaceborne photography, Synthetic aperture radar, Sea ice, Ice conditions, Surface structure, Geophysical surveys, Scattering, Polarization (waves), Classifications, Fractals, Statistical analysis, Image processing

50-5686

Least average residual algorithm (LARA) for tracking the motion of arctic sea ice.

Peddada, S.D., McDevitt, R., *IEEE transactions on geoscience and remote sensing,* July 1996, 34(4), p.915-926, 9 refs.

Sea ice distribution, Drift, Ice floes, Ice edge, Synthetic aperture radar, Radar tracking, Classifications, Image processing, Data processing, Statistical analysis, Mathematical models

50-5687

Nitrous oxide emission from an agricultural soil subjected to different freeze-thaw cycles.

Chen, Y., Tessier, S., MacKenzie, A.F., Laverdière, M.R., *Agriculture, ecosystems and environment,* Sep. 1995, 55(2), p.123-128, 15 refs.

Soil science, Agriculture, Soil air interface, Greenhouse effect, Vapor transfer, Freeze thaw cycles, Freeze thaw tests, Soil freezing, Sampling, Simulation, Environmental impact

50-5688

Factors controlling suspended sediment transport in Himalayan glacier meltwaters.

Hasnain, S.I., *Journal of hydrology,* June 1996, 181(1-4), p.49-62, 26 refs.

Glacial hydrology, Mountain glaciers, River basins, Stream flow, Glacier melting, Meltwater, Subglacial drainage, Suspended sediments, Sediment transport, Precipitation (meteorology), Hydrography, Seasonal variations, India—Himalaya Mountains

50-5689

Snowmelt modelling by combining air temperature and a distributed radiation index.

Cazorzi, F., Dalla Fontana, G., *Journal of hydrology,* June 1996, 181(1-4), p.169-187, 28 refs.

Watersheds, Snow hydrology, Snowmelt, Snow water equivalent, Heat balance, Radiation balance, Air temperature, Indexes (ratios), Mapping, Computerized simulation, Models

50-5690

Preliminary hydrological results from Sarennes glacier basin, French Alps.

Barbet, D., Gay, M., Oberlin, G., Valla, F., *Acta geologica Hispanica,* 1993, 28(2-3), Experimental and Representative Basins Conference on Assessment of Hydrological Temporal Variability and Changes, 5th, Barcelona, Spain, 1994. Selected paper, p.3-14, 21 refs.

Glacial hydrology, Glacial rivers, River flow, Hydrography, Flow measurement, Mountain glaciers, Alpine glaciation, Glacier melting, Glacier mass balance, Runoff, Periodic variations, France—Alps

50-5691

Antifreeze proteins and their potential use in frozen foods.

Griffith, M., Ewart, K.V., *Biotechnology advances,* 1995, 13(3), p.375-402, Refs. p.395-402.

Antifreezes, Preserving, Frozen liquids, Ice physics, Recrystallization, Cryobiology, Ice solid interface, Adsorption, Chemical analysis

50-5692

Experimental estimation of effective transport coefficients in freeze drying for simulation and optimization purposes.

Lombraña, J.I., Izkara, J., *Drying technology,* 1996, 14(3-4), p.743-763, 13 refs.

Freeze drying, Vacuum freezing, Frozen liquids, Thermal analysis, Freezing front, Mass transfer, Ice sublimation, Ice solid interface, Vapor transfer, Simulation, Mechanical tests, Temperature measurement

50-5693

Reassessment of the Eurasian river input of water, sediment, major elements, and nutrients to the Arctic Ocean.

Gordeev, V.V., Martin, J.M., Sidorov, I.S., Sidorova, M.V., *American journal of science,* June 1996, 296(6), p.664-691, Refs. p.689-691.

Oceanography, River basins, Estuaries, River flow, Suspended sediments, Nutrient cycle, Runoff, Sampling, Mass balance, Hydrogeochemistry, Ion density (concentration), Arctic Ocean

50-5694

Evaporation from a small lake in the continental Arctic using multiple methods.

Gibson, J.J., Prowse, T.D., Edwards, T.W.D., *Nordic hydrology,* 1996, 27(1-2), Northern Research Basins Symposium, 10th, Svalbard, Norway, Aug. 1994. Selected papers, p.1-24, 30 refs.

Climatology, Tundra climate, Hydrologic cycle, Lakes, Atmospheric boundary layer, Air ice water interaction, Heat balance, Mass balance, Evaporation, Water level, Mathematical models, Water storage, Canada—Northwest Territories

50-5695

Use of SAR satellite imagery to measure active layer moisture contents in arctic Alaska.

Kane, D.L., Hinzman, L.D., Yu, H.F., Goering, D.J., *Nordic hydrology,* 1996, 27(1-2), Northern Research Basins Symposium, 10th, Svalbard, Norway, Aug. 1994. Selected papers, p.25-38, 15 refs.

Permafrost hydrology, Watersheds, Arctic landscapes, Remote sensing, Permafrost surveys, Spaceborne photography, Synthetic aperture radar, Active layer, Moisture detection, Water content, Surface roughness, Image processing, United States—Alaska—Imnavait Creek

50-5696

Thermal regime of ice covered Swedish lakes.

Bengtsson, L., Svensson, T., *Nordic hydrology,* 1996, 27(1-2), Northern Research Basins Symposium, 10th, Svalbard, Norway, Aug. 1994. Selected papers, p.39-56, 16 refs.

Limnology, Icebound lakes, Heat balance, Heat flux, Thermal regime, Water temperature, Ice cover effect, Solar radiation, Air ice water interaction, Radiant cooling, Seasonal variations, Sweden

50-5697

Subpermafrost groundwater, western Svalbard.

Haldorsen, S., Heim, M., Lauritzen, S.E., *Nordic hydrology,* 1996, 27(1-2), Northern Research Basins Symposium, 10th, Svalbard, Norway, Aug. 1994. Selected papers, p.57-68, 25 refs.

Permafrost hydrology, Permafrost transformation, Geothermal thawing, Glacial hydrology, Subpermafrost ground water, Subglacial drainage, Water flow, Bedrock, Heat transfer, Norway—Svalbard

50-5698

Effect of river-ice break-up on suspended sediment and select trace-element fluxes.

Milburn, D., Prowse, T.D., *Nordic hydrology,* 1996, 27(1-2), Northern Research Basins Symposium, 10th, Svalbard, Norway, Aug. 1994. Selected papers, p.69-84, 40 refs.

Hydrologic cycle, River ice, River flow, Ice breakup, Ice cover effect, Sediment transport, Suspended sediments, Metals, Sampling, Water chemistry, Microanalysis

50-5699

Open-water and ice-jam flooding of a northern delta.

Prowse, T.D., Lalonde, V., *Nordic hydrology,* 1996, 27(1-2), Northern Research Basins Symposium, 10th, Svalbard, Norway, Aug. 1994. Selected papers, p.85-100, 18 refs.

River basins, Deltas, Water level, Flooding, Water transport, Flow control, Channels (waterways), River ice, Ice jams, Ice breakup, Ice cover effect

50-5700

Oxygen isotope and ionic concentrations in glacier river water: multi-year observations in the Austre Okstindbreen Basin, Norway.

Theakstone, W.H., Knudsen, N.T., *Nordic hydrology,* 1996, 27(1-2), Northern Research Basins Symposium, 10th, Svalbard, Norway, Aug. 1994. Selected papers, p.101-116, 23 refs.

Glacial hydrology, Snow hydrology, Glacial rivers, Subglacial drainage, Water chemistry, Snow composition, Sampling, Isotope analysis, Oxygen isotopes, Ion density (concentration), Snow cover effect, Water balance, Seasonal variations, Norway

50-5701

Preliminary considerations for runoff modelling in GCMS.

Verseghy, D., *Nordic hydrology,* 1996, 27(1-2), Northern Research Basins Symposium, 10th, Svalbard, Norway, Aug. 1994. Selected papers, p.117-128, 22 refs.

Hydrologic cycle, Runoff forecasting, Climatology, Surface waters, Surface drainage, Seepage, Snowmelt, Stream flow, Soil freezing, Runoff forecasting, Precipitation (meteorology), Water storage, Models

50-5702

Effects of hydrology on the thermal conditions of the active layer.

Woo, M.K., Xia, Z.J., *Nordic hydrology,* 1996, 27(1-2), Northern Research Basins Symposium, 10th, Svalbard, Norway, Aug. 1994. Selected papers, p.129-142, 12 refs.

Permafrost hydrology, Active layer, Continuous permafrost, Seasonal freeze thaw, Permafrost heat balance, Permafrost thermal properties, Water content, Ground ice, Heat flux, Soil temperature, Thermal conductivity

50-5703

Doppler splitting of an emission line produced by an oscillator moving over an ice cover.

Vdovichenko, S.P., *Acoustical physics,* May-June 1996, 42(3), p.312-317, Translated from Akusticheskiĭ zhurnal. 17 refs.

Sea ice, Ice air interface, Gravity waves, Sound waves, Velocity, Wave propagation, Ice deformation, Mathematical models, Spectra, Hydrodynamics

50-5704

Petroleum-producing sequences in the Phanerozoic deposits of the arctic islands.

Daniushevskaia, A.I., *Geochemistry international,* Oct. 1996, 33(10), p.27-38, Translated from Geokhimiia. 11 refs.

Hydrocarbons, Marine geology, Sediments, Organic soils, Clays, Bitumens, Boreholes, Drill core analysis, Geochemistry, Lithology, Exploration, Russia—Franz Josef Land

50-5705

Determination of snowmelt factor in the Himalayan region.

Singh, P., Kumar, N., *Hydrological sciences journal,* June 1996, 41(3), p.301-310, With French summary. 8 refs.

Glacial hydrology, Mountain glaciers, Snowmelt, Runoff, Diurnal variations, Indexes (ratios), Snow air interface, Air temperature, Dusting, Artificial thawing, Albedo, Radiation absorption, Simulation, India—Himalaya Mountains

50-5706
Supercooling and the Mpemba effect: when hot water freezes quicker than cold.
Auerbach, D., *American journal of physics,* Oct. 1995, 63(10), p.882-885, 41 refs.
Ice physics, Water temperature, Supercooling, Liquid cooling, Freezing points, Freezing rate, Freezing front, Phase transformations, Temperature measurement, Temperature gradients

50-5707
Dam construction for Norway's largest hydropower reservoir.
Karlsen, L.E., Krogh, R.M., Johansen, P.M., *International journal of hydropower & dams,* May 1995, 2(3), p.27-30, 1 ref.
Cold weather construction, Dams, Reservoirs, Arctic landscapes, Electric power, Rock fills, Rock excavation, Design criteria, Engineering geology, Norway—Svartisen

50-5708
World's first artificial ice plug for a hydro tunnel.
Berggren, A.L., Sandvold, A., *International journal of hydropower & dams,* May 1995, 2(3), p.50-51.
Tunnels, Electric power, Water transport, Hydraulic structures, Artificial freezing, Soil freezing, Flow control, Frozen ground strength, Soil stabilization

50-5709
Evaluation of winter vehicle traction with different types of tires.
Lu, J.J., Junge, D., Esch, D., *Transportation research record,* 1995, No.1501, p.22-30, 8 refs.
Tires, Skid resistance, Vehicles, Cold weather performance, Traction, Ice solid interface, Ice cover effect, Snow cover, Glaze, Ice cover effect, Mechanical tests

50-5710
Transition from *normal* to *fast* sound in liquid water.
Sette, F., Ruocco, G., Krisch, M., Masciovecchio, C., Verbeni, R., Bergmann, U., *Physical review letters,* July 1, 1996, 77(1), p.83-86, 17 refs.
Underwater acoustics, Simulation, X ray analysis, Sound transmission, Velocity measurement, Scattering, Ice spectroscopy, Ice acoustics, Acoustic measurement, Spectra, Optical properties

50-5711
Nomenclature applied to deposits formed in glacial and ice-contact environments.
Hill, H.K., Fleisher, P.J., *Journal of geoscience education,* May 1996, 44(3), p.277-283, 13 refs.
Glacial geology, Glacial deposits, Quaternary deposits, Sediment transport, Geologic processes, Classifications, Terminology, Education

50-5712
Laboratory exploration of Pleistocene climate change, orbital forcing, and ocean-atmosphere interactions.
Roof, S.R., Savoy, L.E., *Journal of geoscience education,* May 1996, 44(3), p.300-308, 19 refs.
Education, Computer applications, Computer programs, Paleoclimatology, Pleistocene, Insolation, Climatic changes, Oceanography, Air water interactions

50-5713
X-ray and neutron scattering studies of the structure of water at a hydrophobic surface.
Bellissent-Funel, M.C., Sridi-Dorbez, R., Bosio, L., *Journal of chemical physics,* June 22, 1996, 104(22), p.10023-10029, 15 refs.
Water structure, Molecular structure, Vitreous ice, Amorphous ice, Phase transformations, Cryogenics, Hygroscopicity, X ray analysis, Neutron scattering, Hydrates, Unfrozen water content, Temperature effects, Thermal analysis

50-5714
Cooperativity and hydrogen bond network lifetime in liquid water.
Lamanna, R., Floridi, G., Cannistraro, S., *Physical review E,* Oct. 1995, 52(4-B), p.4529-4532, 17 refs.
Water structure, Molecular structure, Hydrogen bonds, Supercooling, Liquid phases, Dynamic properties, Temperature effects, Thermodynamics, Mathematical models

50-5715
Proceedings.
Arctic and Marine Oilspill Program (AMOP) Technical Seminar, 18th, Edmonton, Alberta, June 14-16, 1995, Ottawa, Environment Canada, Emergencies Science Division, 1995, 1299p. (2 vols.), Refs. passim. Title page in English and French. For selected papers see 50-5716 through 50-5734.
Oil spills, Oil recovery, Water pollution, Soil pollution, Countermeasures, Accidents, Environmental impact, Environmental protection, Waste disposal, Land reclamation, Ice cover effect

50-5716
Adhesion of oil to plastics, stainless steel and ice.
Liukkonen, S., Koskivaara, R., Rytkönen, J., Lampela, K., Arctic and Marine Oilspill Program (AMOP) Technical Seminar, 18th, Edmonton, Alberta, June 14-16, 1995. Proceedings. Vol.1, Ottawa, Environment Canada, Emergencies Science Division, 1995, p.69-90, 6 refs.
Oil spills, Oil recovery, Water pollution, Countermeasures, Ice water interface, Ice cover effect, Liquid solid interfaces, Adhesion

50-5717
Chemical characterization of crude oil residues from an arctic beach by GC/MS and GC/FID.
Wang, Z.D., Fingas, M.F., Sergy, G.A., Arctic and Marine Oilspill Program (AMOP) Technical Seminar, 18th, Edmonton, Alberta, June 14-16, 1995. Proceedings. Vol.1, Ottawa, Environment Canada, Emergencies Science Division, 1995, p.111-139, 33 refs. For another version see 50-1863.
Oil spills, Water pollution, Soil pollution, Beaches, Environmental impact, Crude oil, Chemical analysis, Canada—Northwest Territories—Baffin Island

50-5718
Escorting and tethering oil tankers: complying with the new regulations in Prince William Sound.
Corsini, T.J., Arctic and Marine Oilspill Program (AMOP) Technical Seminar, 18th, Edmonton, Alberta, June 14-16, 1995. Proceedings. Vol.1, Ottawa, Environment Canada, Emergencies Science Division, 1995, p.193-201.
Tanker ships, Petroleum transportation, Marine transportation, Safety, Environmental protection, Legislation, United States—Alaska—Prince William Sound

50-5719
New environmental database mapping for oil spill response in Alaska.
O'Brien, D.K., Brown-Maunder, S.B., Hillman, S.O., Arctic and Marine Oilspill Program (AMOP) Technical Seminar, 18th, Edmonton, Alberta, June 14-16, 1995. Proceedings. Vol.1, Ottawa, Environment Canada, Emergencies Science Division, 1995, p.227-242, 23 refs.
Oil spills, Oil recovery, Accidents, Environmental protection, Regional planning, Data processing, Data transmission, United States—Alaska

50-5720
Sea ice over-flooding: a challenge to oil spill countermeasure planners in the outer Mackenzie Delta, N.W.T.
Webb, R., Arctic and Marine Oilspill Program (AMOP) Technical Seminar, 18th, Edmonton, Alberta, June 14-16, 1995. Proceedings. Vol.1, Ottawa, Environment Canada, Emergencies Science Division, 1995, p.243-256, 20 refs.
Oil spills, Oil recovery, Ice water interface, Ice cover effect, Deltas, Water pollution, Countermeasures, Environmental protection, Canada—Northwest Territories—Mackenzie Delta

50-5721
New strategies for free oil recovery and nearshore protection in Prince William Sound.
Hood, S.D., Arctic and Marine Oilspill Program (AMOP) Technical Seminar, 18th, Edmonton, Alberta, June 14-16, 1995. Proceedings. Vol.1, Ottawa, Environment Canada, Emergencies Science Division, 1995, p.267-285.
Oil spills, Oil recovery, Water pollution, Soil pollution, Countermeasures, Beaches, Environmental protection, United States—Alaska—Prince William Sound

50-5722
Developing the U.S. Coast Guard's Airborne Dispersant Delivery System capability.
Bleicher, D., Beauregard, D., Shier, L., Means, P., Arctic and Marine Oilspill Program (AMOP) Technical Seminar, 18th, Edmonton, Alberta, June 14-16, 1995. Proceedings. Vol.1, Ottawa, Environment Canada, Emergencies Science Division, 1995, p.329-338.
Oil spills, Oil recovery, Accidents, Water pollution, Countermeasures, Environmental protection, Airborne equipment, Surfactants, Regional planning, United States—Alaska

50-5723
Use of surfactants in oil spill remediation in cold regions.
Tumeo, M.A., Cote, A., Pfister, T., Alter, B., Rog, S., Arctic and Marine Oilspill Program (AMOP) Technical Seminar, 18th, Edmonton, Alberta, June 14-16, 1995. Proceedings. Vol.1, Ottawa, Environment Canada, Emergencies Science Division, 1995, p.385-391, 7 refs.
Oil spills, Oil recovery, Accidents, Water pollution, Ice water interface, Ice cover effect, Tundra soils, Soil pollution, Land reclamation, Countermeasures, Surfactants

50-5724
Enhancing the encounter rate of a prototype weir skimmer.
Delozier, M.J., Arctic and Marine Oilspill Program (AMOP) Technical Seminar, 18th, Edmonton, Alberta, June 14-16, 1995. Proceedings. Vol.2, Ottawa, Environment Canada, Emergencies Science Division, 1995, p.661-670.
Oil spills, Oil recovery, Water pollution, Countermeasures, Environmental protection, United States—Alaska—Prince William Sound

50-5725
Pump and treat and vapour extraction technology to remediate a hydrocarbon spill in northwestern Alberta.
Mitton, M.J., McClymont, G.L., Arctic and Marine Oilspill Program (AMOP) Technical Seminar, 18th, Edmonton, Alberta, June 14-16, 1995. Proceedings. Vol.2, Ottawa, Environment Canada, Emergencies Science Division, 1995, p.679-687, 5 refs.
Oil spills, Oil recovery, Soil pollution, Water pollution, Countermeasures, Waste disposal, Land reclamation, Canada—Alberta

50-5726
Subsurface Oil in Coarse Sediments Experiments (SOCSEX II).
Harper, J.R., Sergy, G.A., Sagayama, T., Arctic and Marine Oilspill Program (AMOP) Technical Seminar, 18th, Edmonton, Alberta, June 14-16, 1995. Proceedings. Vol.2, Ottawa, Environment Canada, Emergencies Science Division, 1995, p.867-886, 10 refs.
Oil spills, Oil recovery, Water pollution, Soil pollution, Beaches, Environmental impact, Waste disposal, Land reclamation, United States—Alaska—Prince William Sound

50-5727
Smoke plume trajectory from *in situ* burning of crude oil in Alaska—field experiments.
McGrattan, K.B., Walton, W.D., Putorti, A.D., Twilley, W.H., McElroy, J., Evans, D.D., Arctic and Marine Oilspill Program (AMOP) Technical Seminar, 18th, Edmonton, Alberta, June 14-16, 1995. Proceedings. Vol.2, Ottawa, Environment Canada, Emergencies Science Division, 1995, p.901-913, 10 refs.
Oil spills, Water pollution, Soil pollution, Air pollution, Countermeasures, Waste disposal, United States—Alaska

50-5728

In-situ burning of uncontained crude oil and emulsions.

Guénette, C.C., Sveum, P., Arctic and Marine Oilspill Program (AMOP) Technical Seminar, 18th, Edmonton, Alberta, June 14-16, 1995. Proceedings. Vol.2, Ottawa, Environment Canada, Emergencies Science Division, 1995, p.997-1010, 10 refs.

Oil spills, Water pollution, Countermeasures, Waste disposal, Norway—Spitsbergen

50-5729

Emulsion breaking igniters: recent developments in oil spill igniter concepts.

Guénette, C.C., Sveum, P., Arctic and Marine Oilspill Program (AMOP) Technical Seminar, 18th, Edmonton, Alberta, June 14-16, 1995. Proceedings. Vol.2, Ottawa, Environment Canada, Emergencies Science Division, 1995, p.1011-1025, 11 refs.

Oil spills, Water pollution, Countermeasures, Waste disposal, Ice water interface, Ice cover effect, Norway—Spitsbergen

50-5730

Prince William Sound intertidal biota—good news and bad news five years later.

Houghton, J.P., Gilmour, R.H., Lees, D.C., Driskell, W.B., Lindstrom, S.C., Arctic and Marine Oilspill Program (AMOP) Technical Seminar, 18th, Edmonton, Alberta, June 14-16, 1995. Proceedings. Vol.2, Ottawa, Environment Canada, Emergencies Science Division, 1995, p.1075-1093, 10 refs.

Oil spills, Water pollution, Soil pollution, Marine biology, Environmental impact, Beaches, Littoral zone, United States—Alaska—Prince William Sound

50-5731

Komi oil spill—an assessment by a multi-national team.

Devenis, P.K., Arctic and Marine Oilspill Program (AMOP) Technical Seminar, 18th, Edmonton, Alberta, June 14-16, 1995. Proceedings. Vol.2, Ottawa, Environment Canada, Emergencies Science Division, 1995, p.1147-1161, 5 refs.

Oil spills, Pipelines, Accidents, Water pollution, Soil pollution, Environmental impact, Oil recovery, Land reclamation, Russia—Komi

50-5732

Fate of oil determinations under arctic conditions; the Komi pipeline oil spill experience.

Nadeau, R.J., Hansen, O., Arctic and Marine Oilspill Program (AMOP) Technical Seminar, 18th, Edmonton, Alberta, June 14-16, 1995. Proceedings. Vol.2, Ottawa, Environment Canada, Emergencies Science Division, 1995, p.1163-1175, 4 refs.

Oil spills, Pipelines, Accidents, Water pollution, Soil pollution, Environmental impact, Russia—Komi

50-5733

Large volume oil spill on land surface: the Vozey oil field, Russia.

Zoltai, S.C., Kershaw, G.P., Arctic and Marine Oilspill Program (AMOP) Technical Seminar, 18th, Edmonton, Alberta, June 14-16, 1995. Proceedings. Vol.2, Ottawa, Environment Canada, Emergencies Science Division, 1995, p.1177-1186, 12 refs.

Oil spills, Pipelines, Accidents, Water pollution, Soil pollution, Environmental impact, Peat, Wetlands, Land reclamation, Russia—Komi

50-5734

Analysis of the Komineft pipeline oil.

Lambert, P., et al, Arctic and Marine Oilspill Program (AMOP) Technical Seminar, 18th, Edmonton, Alberta, June 14-16, 1995. Proceedings. Vol.2, Ottawa, Environment Canada, Emergencies Science Division, 1995, p.1187-1231, 11 refs.

Oil spills, Pipelines, Accidents, Water pollution, Soil pollution, Environmental impact, River ice, Ice water interface, Ice cover effect, Crude oil, Chemical analysis, Russia—Komi

50-5735

Dynamics of antarctic penguin populations in relation to inter-annual variability in sea ice distribution.

Trathan, P.N., Croxall, J.P., Murphy, E.J., *Polar biology,* May 1996, 16(5), p.321-330, Refs. p.329-330.

Sea ice distribution, Ecology, Ice cover effect, Antarctica—Signy Island

To investigate the role of sea ice cover on penguin populations, the authors used principal component analysis to compare population variables of Adélie *(Pygoscelis adeliae)* and chinstrap *(P. antarctica)* penguins breeding on Signy I. with local (from direct observations) and regional (from remote sensing data) sea ice variables. Throughout the study period, the Adélie penguin population size remained stable, whereas that of chinstrap penguins decreased slightly. For both species, no general relationship was found between either population size or breeding success and the local sea ice conditions. However, the regional sea ice extent at a particular time prior to the start of the breeding season was related to the number of birds that arrived to breed. For both species, this period occurred before the sea ice reached its maximum extent and was slightly earlier for Adélie than for chinstrap penguins. These results suggest that sea ice conditions outside the breeding season may play an important role in penguin population processes. (Auth. mod.)

50-5736

Modeling an acoustic response to long-term variations of water and ice characteristics in the Arctic Ocean.

Gavrilov, A.N., Mikhalevsky, P.N., Oceans '95 MTS/IEEE, San Diego, California, Oct. 9-12, 1995. Proceedings. Challenges of our changing global environment, Vol.1, New York, Oceans '95 MTS/IEEE, 1995, p.247-253, 12 refs.

DLC GC2.O3 1995

Mathematical models, Oceanography, Water temperature, Underwater acoustics, Sea ice, Wave propagation, Ice cover effect, Attenuation, Climate

50-5737

Driving the diversion tunnel at Manic 3.

Canadian Industries Limited. Explosives Technical Marketing Services, CIL explosives bulletin, Montreal, 1972, 10p.

Rock excavation, Rock drilling, Tunneling (excavation), Blasting, Explosives, Flow control, Canada—Quebec—Manicouagan River

50-5738

Churchill Falls development.

Canadian Industries Limited. Explosives Technical Marketing Services, CIL explosives bulletin, Montreal, 1971, 22p.

Rock excavation, Rock drilling, Tunneling (excavation), Blasting, Explosives, Canada—Labrador

50-5739

Ions and dipoles in water and ice, and their transfer through the interface.

Von Hippel, A., Mykolajewycz, R., Runck, A.H., Westphal, W.B., *Massachusetts Institute of Technology. Laboratory for Insulation Research. Technical report,* Mar. 1974, No.14, 19p., 31 refs.

Ice crystal structure, Doped ice, Ice electrical properties, Ice dielectrics, Ice water interface, Ion diffusion, Proton transport, Molecular energy levels

50-5740

Topographic mapping and glaciological research on Aletsch Glacier and in the eastern Alps. [Topographisch-kartographische und glaziologische Forschung am Aletschgletscher und in den Ostalpen]

Finsterwalder, R., *Zeitschrift für Vermessungswesen,* 1961, 86(3), p.106-108, In German. 6 refs.

Mountain glaciers, Glacier surveys, Topographic maps, Switzerland

50-5741

Contribution to the structural study of high latitude cold ice. [Contribution à l'étude structurographique de la glace froide de haute latitude]

Vallon, M., *Académie des Sciences, Paris. Comptes rendus,* Dec. 16, 1963, Vol.257, p.3988-3991, In French. 4 refs.

Ice sheets, Glacier ice, Ice structure, Ice optics, Norway—Spitsbergen

50-5742

Temperate ice stratigraphy in terms of liquid water content. [Stratigraphie de la glace tempéré à l'aide de la teneur en eau liquide]

Joubert, J.L., *Académie des Sciences, Paris. Comptes rendus,* Dec. 4, 1963, Vol.257, p.3638-3639, In French. 1 ref.

Glacier ice, Firn stratification, Ice cores, Unfrozen water content

50-5743

Contribution to the geomorphological problem of strandflats. [Ein Beitrag zum geomorphologischen Problem der Strandflate]

Tietze, W., *Petermanns geographischen Mitteilungen,* 1962, 1st quarter, 20p., In German with English and Russian summaries. 110 refs.

Glaciation, Glacial geology, Glacial erosion, Ice shelves, Isostasy, Marine geology, Shoreline modification, Terraces, Coastal topographic features

50-5744

Areal extent and frontal elevations of Swiss glaciers: their changes from 1876 to 1934 according to the Siegfried Atlas and the National Map and some data on their variations from 1934 to 1957. [Aires englacées et cotes frontales des glaciers suisses: leurs changements de 1876 à 1934 d'après l'Atlas Siegfried et la Carte Nationale et quelques indications sur les variations de 1934 à 1957]

Mercanton, P.L., *Wasser, Energie, Luft—Eau, énergie, air (formerly Wasser und Energiewirtschaft—Cours d'eau et énergie),* 1958, No.12, 8p., In French.

Glacier surveys, Glacier oscillation, Glacier thickness, Snow line, Switzerland

50-5745

International Glaciological Greenland Expedition, 1959/60. [Die Internationale Glaziologische Grönland-Expedition 1959/60]

Hofmann, W., *Naturwissenschaftliche Rundschau,* May 1958, 11(5), p.169-175, In German.

Glacier surveys, Topographic surveys, Expeditions, Greenland

50-5746

Climatological interpretation of a firn pollen profile. [Klimatologische Interpretation eines Firnpollenprofiles]

Ambach, W., Eisner, H., *Schweizerische Meteorologische Zentralanstalt, Zurich. Veröffentlichungen,* 1967, No.4, Internationale Tagung für Alpine Meteorologie, 9th, Brig and Zermatt, Switzerland, Sep. 14-17, 1966, p.25-31, In German with French and English summaries. 9 refs.

Glacier surveys, Glacier oscillation, Glacial meteorology, Glacier alimentation, Firn stratification, Palynology, Austria

50-5747

Erosion by water flowing under ice. [Über die Erosion von unter Eis fließendem Wasser]

Tietze, W., Mainzer geographische Studien (in honor of Professor Panzer's 65th birthday), Braunschweig, Georg Westermann Verlag, 1961, p.125-142, In German. 57 refs.

Ice water interface, Ice cover effect, Subglacial drainage, Water erosion, Glacial erosion, Outwash

50-5748

Diffusion of helium through ice.

Davy, J.G., Miller, K.W., *Solid state communications,* 1970, 8(18), p.1459-1461, With French summary. 13 refs.

Ice crystal structure, Molecular structure, Impurities, Gas inclusions, Self diffusion, Vapor diffusion

50-5749

New permafrost blasting method developed at Asbestos Hill.

Lang, L.C., *Canadian mining journal,* Mar. 1976, 97(3), p.3-8, 12 refs.

Mining, Permafrost, Frozen rock strength, Rock excavation, Rock drilling, Explosives, Blasting, Canada—Quebec—Ungava Peninsula

50-5750

Greenland expedition with the Ni2 level.
Mälzer, H., *Zeiss Werkzeitschrift,* [1960], No.37, 7p., 4 refs.
Topographic surveys, Geodetic surveys, Leveling, Greenland

50-5751

Weather and climate of a high mountain pass in the Colorado Rockies.
Judson, A., *U.S. Forest Service. Research paper,* Nov. 1965, RM-16, 28p., 17 refs.
Snowstorms, Snowfall, Weather forecasting, Avalanche forecasting, United States—Colorado

50-5752

Primer for the avalanche dog leader. *U.S. Forest Service. Wasatch National Forest. Alta Avalanche Study Center. Translation,* Dec. 1964, No.4, 75p., Translation of Das ABC des Lawinenhundführers, published in 1962 by the District Headquarters for the Austrian Mountain Rescue Service of Tirol, Avalanche Dog Division.
Avalanches, Accidents, Rescue operations, Animals

50-5753

On snow cover ablation.
Hofmann, G., *U.S. Forest Service. Wasatch National Forest. Alta Avalanche Study Center. Translation,* Nov. 1964, No.3, 28p., 6 refs. Translated from Archiv für Meteorologie, Geophysik und Bioklimatologie, Serie B, Band 13, 1. Heft, 1963, p.1-20.
Snow heat flux, Snow melting, Snow evaporation, Snow air interface, Mathematical models

50-5754

Electrical properties of ice.
Gross, G.W., Socorro, New Mexico Institute of Mining and Technology, Dec. 1970, 26p., 13 refs. and footnotes passim. For another version see 27-720.
Ice electrical properties, Ice crystal growth, Cloud electrification, Charge transfer

50-5755

Ice accumulation on fixed and floating ocean structures.
Minsk, L.D., MP 3839, Hanover, NH, U.S. Army Cold Regions Research and Engineering Laboratory, Sep. 1975, 70p. + appends., Refs. p.64-70.
Ship icing, Ice accretion, Ice loads, Ice forecasting, Offshore structures

50-5756

1971 performance survey of DEW Line ice cap stations DYE-2 and DYE-3.
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Site surveys, Stations, Cold weather operation, Cold weather construction, Military facilities, Radar, Greenland

50-5757

Feasibility study of foxhole excavation by compressed gas blasting.
Mellor, M., Kovacs, A., MP 3841, Hanover, NH, U.S. Army Cold Regions Research and Engineering Laboratory, June 1971, 22p., 6 refs.
Frozen ground strength, Excavation, Blasting, Explosives, Military equipment

50-5758

Alpine snow fences for avalanche and rockslide control structures. [Alpine-Schneebrücken für die Lawinen- und Steinschlagverbauung]
Österreichisch-Alpine Montangesellschaft (Austrian Alpine Mining Company), Vienna, 1962, n.p., In German. Includes separate publication in pocket: Lawinenverbauung in Stahl und Stahlbeton (Avalanche control structures of steel and reinforced concrete), from Beratungsstelle für Stahlverwendung (Advisory Board for Steel Use), Dusseldorf, Germany, order No.316, 1962, 20p.
Avalanche engineering, Snow fences

50-5759

Hardness of single ice crystals.
Butkovich, T.R., MP 3842, *American mineralogist,* Jan.-Feb. 1958, Vol.43, p.48-57, 5 refs. For another version see 24-3170.
Ice crystal structure, Ice hardness
Brinell and scratch hardness tests were made on single ice crystals. The results of these measurements show that the hardness of single ice crystals increases with decreasing temperature; the Brinell numbers range from about 4 at -5°C to 17 at -50°C. The greatest increase in the hardness values occurs at the higher temperatures. The temperature dependence of the scratch hardness was similar to that of Brinell hardness. An anisotropism of hardness is evident; the single ice crystal is harder parallel to the *c*-axis than in the direction normal to the *c*-axis. An apparent difference in surface structure with respect to orientation was noticed during the scratch hardness tests. A consistent wavy scratch was produced normal to the *c*-axis, while the scratch parallel to the *c*-axis was always straight.

50-5760

Analysis of stone size and shape in arctic environments.
King, C.A.M., Buckley, J.T., *Journal of sedimentary petrology,* Mar. 1968, 38(1), p.200-214, 14 refs.
Glacial geology, Glacial deposits, Moraines, Outwash, Alluvium, Periglacial processes, Solifluction, Particle size distribution, Statistical analysis, Canada—Northwest Territories—Baffin Island

50-5761

Theoretical and experimental study on the electrical properties of ice Ih: the Maxwell-Wagner versus the Jaccard model for condenser sampling of pure and doped ice. [Theoretische und experimentelle Untersuchung elektrischer Eigenschaften von Eis-Ih: Maxwell-Wagner- kontra Jaccard-Modell für Kondensatorproben reinen und dotierten Eises]
Taubenberger, R., Zurich, Eidgenössische Technische Hochschule, 1982, 177p. + append., Ph.D. thesis. In German with English summary. Refs. p.174-177.
Doped ice, Ice crystal structure, Ice electrical properties, Ice dielectrics, Molecular energy levels, Proton transport, Mathematical models, Computerized simulation

50-5762

Composite report on drilling and blasting of permafrost at Ferriman Mine.
Lang, L.C., Sept-Iles, Quebec, Iron Ore Company of Canada, Operations Research Department, 1964, 92p. + refs., PR(R) 3/64, 14 refs.
Mining, Permafrost, Frozen rock strength, Rock drilling, Rock excavation, Blasting, Explosives

50-5763

Explosives in frozen ground.
Roberts, A., MP 3843, Hanover, NH, U.S. Army Cold Regions Research and Engineering Laboratory, 1971, 242p. (2 vols.), 110 refs.
Rock excavation, Tunneling (excavation), Frozen rock strength, Frozen ground strength, Frozen ground mechanics, Blasting, Explosives, Explosion effects, Detonation waves

50-5764

Modeling of the processing and removal of trace gas and aerosol species by arctic radiation fogs and comparison with measurements.
Bergin, M.H., et al, *Journal of geophysical research,* June 20, 1996, 101(D9), p.14,465-14,478, 49 refs.
Atmospheric boundary layer, Atmospheric composition, Degradation, Fog formation, Fog dispersal, Heterogeneous nucleation, Aerosols, Ice sheets, Snow air interface, Snow impurities, Mathematical models, Environmental impact

50-5765

Polar Ozone and Aerosol Measurement instrument.
Glaccum, W., et al, *Journal of geophysical research,* June 20, 1996, 101(D9), p.14,479-14,487, 11 refs.
Polar atmospheres, Atmospheric composition, Atmospheric density, Degradation, Stratosphere, Polar stratospheric clouds, Ozone, Profiles, Aerosols, Remote sensing, Photometry, Measuring instruments, Design
The second Polar Ozone and Aerosol Measurement instrument (POAM II) is a spaceborne experiment designed to measure the vertical profiles of ozone, water vapor, nitrogen dioxide, aerosol extinction and temperature in the polar stratosphere and upper troposphere with a vertical resolution of about 1 km. Measurements are made by the solar occultation technique. The instrument package, which has a mass of less than 25 kg, is carried on the Satellite Pour l'Observation de la Terre (SPOT) 3 spacecraft and has a design lifetime of 3 to 5 years. POAM II has provided data on the south polar ozone hole, north and south polar ozone phenomena, the spatial and temporal variability of stratospheric aerosols and polar stratospheric clouds, and has detected polar mesospheric clouds. (Auth.)

50-5766

Partitioning of hydrogen species in the arctic winter stratosphere: implications for microphysical parameters.
Schiller, C., Engel, A., Schmidt, U., Borchers, R., Ovarlez, J., *Journal of geophysical research,* June 20, 1996, 101(D9), p.14,489-14,493, 18 refs.
Polar atmospheres, Polar stratospheric clouds, Atmospheric composition, Cloud physics, Ozone, Aerosols, Water vapor, Turbulent diffusion, Ice formation, Profiles, Sampling

50-5767

Total hydrogen budget in the arctic winter stratosphere during the European Arctic Stratospheric Ozone Experiment.
Engel, A., Schiller, C., Schmidt, U., Borchers, R., Ovarlez, H., Ovarlez, J., *Journal of geophysical research,* June 20, 1996, 101(D9), p.14,495-14,503, 41 refs.
Polar atmospheres, Atmospheric composition, Stratosphere, Cloud physics, Air masses, Profiles, Water vapor, Hydrogen, Turbulent diffusion, Sampling

50-5768

Chemical loss of polar vortex ozone inferred from UARS MLS measurements of ClO during the arctic and antarctic late winters of 1993.
MacKenzie, I.A., Harwood, R.S., Froidevaux, L., Read, W.G., Waters, J.W., *Journal of geophysical research,* June 20, 1996, 101(D9), p.14,505-14,518, 47 refs.
Polar atmospheres, Climatology, Stratosphere, Cloud physics, Air pollution, Aerosols, Degradation, Ozone, Sounding, Photochemical reactions, Mathematical models
A computationally cheap and easily initialized photochemical model using Upper Atmospheric Research Satellite Microwave Limb Sounder measurements of ClO to calculate ozone destruction rates within the polar vortices due to the ClO + ClO, ClO + BrO, and ClO + O catalytic cycles is developed. The method involves calculating local reactive chlorine concentrations from individual ClO retrievals, and then inferring the diurnal cycle of ClO from a quadratic expression using the relevant kinetic parameters. In test integrations this simple treatment is shown to give good agreement with more detailed model calculations. Analysis of the late arctic and antarctic winters of 1993 yields similar vortex-averaged ozone loss rates at 465 K of ca. 1% per day in both hemispheres, while the reactive chlorine remains enhanced. Net ozone destruction in the north is less, largely because the elevated ClO and Cl_2O_2 concentrations are less persistent. The estimated chemical destruction on isentropic surfaces in the lower stratosphere is broadly similar to the observed change in ozone distribution, implying that the change is dominated by chemical destruction. (Auth. mod.)

50-5769

Eight-year (1987-1994) time series of rainfall, clouds, water vapor, snow cover, and sea ice derived from SSM/I measurements.
Ferraro, R.R., Weng, F.F., Grody, N.C., Basist, A., *American Meteorological Society. Bulletin,* May 1996, 77(5), p.891-905, 27 refs.
Precipitation (meteorology), Climatology, Water vapor, Hydrologic cycle, Weather observations, Geophysical surveys, Remote sensing, Radiometry, Snow cover distribution, Sea ice distribution, Seasonal variations, Data processing

50-5770

Shoot biomass $\varepsilon^{13}C$, nitrogen and chlorophyll responses of two arctic dwarf shrubs to in situ shading, nutrient application and warming simulating climatic change.
Michelsen, A., Jonasson, S., Sleep, D., Havström, M., Callaghan, T.V., *Oecologia,* Jan. 1, 1996, 105(1), p.1-12, 42 refs.
Trees (plants), Plant ecology, Tundra vegetation, Tundra climate, Global warming, Plant physiology, Biomass, Growth, Carbon isotopes, Simulation, Environmental tests, Temperature effects

50-5771
Growth responses of an alpine grassland to elevated CO_2.
Schäppi, B., Körner, C., *Oecologia,* Jan. 1, 1996, 105(1), p.43-52, 37 refs.
Plant ecology, Alpine landscapes, Grasses, Biomass, Growth, Carbon dioxide, Vapor transfer, Photosynthesis, Microclimatology, Environmental tests

50-5772
Leaf ^{15}N abundance of subarctic plants provides field evidence that ericoid, ectomycorrhizal and non- and arbuscular mycorrhizal species access different sources of soil nitrogen.
Michelsen, A., Schmidt, I.K., Jonasson, S., Quarmby, C., Sleep, D., *Oecologia,* Jan. 1, 1996, 105(1), p.53-63, 48 refs.
Plant ecology, Plant physiology, Soil microbiology, Nutrient cycle, Roots, Fungi, Lichens, Subarctic landscapes, Tundra vegetation, Sampling, Biomass, Precipitation (meteorology), Snow composition, Isotope analysis

50-5773
Xylem dysfunction during winter and recovery of hydraulic conductivity in diffuse-porous and ring-porous trees.
Hacke, U., Sauter, J.J., *Oecologia,* Mar. 1996, 105(4), p.435-439, 25 refs.
Trees (plants), Plant physiology, Plant tissues, Freezing, Cold weather tests, Damage, Cavitation, Water pressure, Simulation, Seasonal variations

50-5774
Cold resistance mechanisms in high desert Andean plants.
Squeo, F.A., Rada, F., García, C., Ponce, M., Rojas, A., Azócar, A., *Oecologia,* Mar. 1996, 105(4), p.552-555, 28 refs.
Alpine landscapes, Plant ecology, Plant tissues, Cold tolerance, Frost resistance, Cold weather survival, Supercooling, Freezing points, Thermal analysis, Temperature effects, Chile—Andes Mountains

50-5775
Importance of the correction of precipitation measurements on the Tibetan Plateau.
Ueno, K., Ohata, T., *Meteorological Society of Japan. Journal,* Apr. 1996, 74(2), p.211-220, With Japanese summary. 35 refs.
Precipitation (meteorology), Climatology, Mountains, Snowfall, Sampling, Wind factors, Hydrologic cycle, Statistical analysis, Snow water equivalent, Seasonal variations, Accuracy, China—Tibet

50-5776
Manganese and other trace elements in urban snow near an expressway.
Loranger, S., Tétrault, M., Kennedy, G., Zayed, J., *Environmental pollution,* Apr. 26, 1996, 92(2), p.203-211, 20 refs.
Air pollution, Aerosols, Roads, Hydrocarbons, Snowfall, Scavenging, Snow impurities, Snow composition, Sampling, Ion density (concentration), Statistical analysis, Meteorological factors, Environmental tests

50-5777
Impact crater lakes on Mars.
Newsom, H.E., Brittelle, G.E., Hibbitts, C.A., Crossey, L.J., Kudo, A.M., *Journal of geophysical research,* June 25, 1996, 101(E6), p.14,951-14,955, 28 refs.
Mars (planet), Hydrologic cycle, Regolith, Ecosystems, Pit and mound topography, Extraterrestrial ice, Ice formation, Lacustrine deposits, Lake ice, Water flow, Ice melting, Water supply

50-5778
Experimental design for laboratory simulation of periglacial solifluction processes.
Harris, C., Davies, M.C.R., Coutard, J.P., *Earth surface processes and landforms,* Jan. 1996, 21(1), p.67-75, 13 refs.
Frozen ground mechanics, Soil tests, Thermal regime, Solifluction, Periglacial processes, Mass transfer, Freeze thaw cycles, Slope processes, Frost penetration, Frost heave, Thaw consolidation, Test chambers, Design, Simulation

50-5779
Growth dynamics and population development in an alpine grassland under elevated CO_2.
Schäppi, B., *Oecologia,* Apr. 1, 1996, 106(2), p.93-99, 21 refs.
Ecosystems, Microclimatology, Plant ecology, Grasses, Alpine landscapes, Biomass, Carbon dioxide, Vapor transfer, Growth, Revegetation, Seasonal variations, Simulation

50-5780
Molecular dynamics study of the freezing of clusters of chalcogen hexafluorides.
Kinney, K.E., Xu, S.M., Bartell, L.S., *Journal of physical chemistry,* Apr. 25, 1996, 100(17), p.6935-6941, 37 refs.
Liquid cooling, Supercooling, Cryogenics, Freezing nuclei, Frozen liquids, Homogeneous nucleation, Phase transformations, Solidification, Molecular energy levels, Molecular structure, Computerized simulation, Liquid phases, Solid phases, Stability

50-5781
Freezing of aqueous sodium chloride solution saturated packed bed from a vertical cell of a rectangular cavity.
Choi, J., Viskanta, R., *International journal of heat and mass transfer,* July 1993, 36(11), p.2805-2813, 20 refs.
Solutions, Salt water, Frozen liquids, Heat flux, Convection, Porous materials, Slush, Liquid phases, Phase transformations, Freezing, Ice water interface, Temperature distribution

50-5782
Natural convection and heat transfer in a vertical cavity filled with an ice-water saturated porous medium.
Zhang, X.L., *International journal of heat and mass transfer,* July 1993, 36(11), p.2881-2890, 12 refs.
Porous materials, Saturation, Frozen liquids, Ice water interface, Density (mass/volume), Phase transformations, Heat transfer, Convection, Isotherms, Mathematical models

50-5783
Probability of sea level rise.
Titus, J.G., Narayanan, V.K., Washington, D.C., U.S. Environmental Protection Agency, 1995, 186p., Numerous end-of-chapter refs.
DLC GC89.T57 1995
Sea level, Sea ice, Ice melting, Ice sheets, Ablation, Models
This report develops probability-based projections that can be added to local tide-gauge trends to estimate future sea level at particular locations. The key coefficients in these models are based on subjective probability distributions supplied by a cross-section of climatologists, oceanographers, and glaciologists. This report estimates that global temperatures are most likely to rise 1°C by the year 2050 and 2°C by the year 2100; that there is a 10% chance that temperatures will rise more than 4°C in the next century, and a 90% chance that they will rise by at least the 0.6°C warming of the last century. By contrast, IPCC (1992) estimated that a warming of 2.8°C was most likely. The temperature estimates are lower because (a) lower concentrations of carbon dioxide are assumed; (b) the cooling effects of sulfates and stratospheric ozone depletion are included; and (c) the panel of experts included a scientist who doubts that greenhouse gases will substantially increase global temperatures. Data from Greenland and antarctic ice sheets are included. (Auth. mod.)

50-5784
Instructions for compilation and assemblage of data for a world glacier inventory.
Müller, F., Caflisch, T., Müller, G., International Commission on Snow and Ice. Temporary Technical Secretariat for World Glacier Inventory, Zurich, Swiss Federal Institute of Technology (ETH), Department of Geography, 1977, 19p. + append.
Glacier surveys, Data processing

50-5785
Tuckerman Ravine snowbed.
Havens, J.M., *Mount Washington Observatory. News bulletin,* Mar. 1961, 2p.
Snow cover distribution, Snow melting, Snow line, United States—New Hampshire

50-5786
Importance in atmospheric electricity of charge transfer associated with temperature gradients in ice.
Latham, J., Conference on Static Electrification, 2nd, London, May 8-11, 1967, London, Institute of Physics and the Physical Society, 1967, p.44-51, 50 refs.
DLC QC571.C6 1967
Ice electrical properties, Ice crystal collision, Ice thermal properties, Ice air interface, Atmospheric electricity, Thermoelectric effects, Static electricity, Charge transfer

50-5787
Propagation of elastic waves in ice.
Ryzhkin, I.A., *Physica status solidi (a),* 1984, Vol.86, p.K87-K90, 4 refs.
Ice crystal structure, Ice elasticity, Ice relaxation, Elastic waves, Molecular energy levels, Proton transport, Mathematical models

50-5788
Climatic change and the retreat of glaciers.
Bonacina, L.C.W., Hawkes, L., *Royal Meteorological Society. Quarterly journal,* Jan.-Apr. 1947, 73(315/316), p.85-95.
Glacier oscillation, Glacial meteorology, Glacier formation, Climatic changes

50-5789
Note on Ice Island WH-5.
Nutt, D.C., Coachman, L.K., *Arctic,* Sep. 1963, 16(3), p.205-206.
Ice islands, Drift

50-5790
Electrification mechanisms of snow crystals. Part I: forcible separations between ice crystal charges and their surrounding space charge densities.
Endoh, T., *Hokkaido University. Faculty of Science. Journal. Series VII (Geophysics),* Mar. 1981, 7(1), p.75-88, 13 refs.
Snow crystal growth, Snow electrical properties, Ice crystal growth, Ice electrical properties, Cloud electrification, Charge transfer, Thunderstorms

50-5791
Horizontal distribution of snowfalls on the Ishikari Plain, Hokkaido. Part I: the snowfall and wind in the land.
Lee, C.W., Kikuchi, K., Magono, C., *Hokkaido University. Geophysical bulletin (Hokkaido daigaku chikyu butsurigaku kenkyu hokoku),* Mar. 1972, No.27, p.13-23, In Japanese with English summary. 10 refs.
Snowfall, Snow cover distribution, Precipitation (meteorology), Wind factors, Weather forecasting, Japan—Hokkaido

50-5792
Annealing effects on the internal friction of artificial ice single crystals.
Oguro, M., Hori, Y., Sugoh, T., *Hokkaido University of Education. Journal (Hokkaido kyoiku daigaku kiyo). Section IIA,* Sep. 1981, 32(1), p.33-47, In Japanese with English summary. 9 refs.
Ice crystal growth, Ice crystal structure, Ice relaxation, Internal friction

50-5793
Dynamical prpcesses of dislocations and point defects in ice crystal.
Higashi, A., Fukuda, A., Hondoh, T., Goto, K., Amakai, S., *Hokkaido University. Faculty of Engineering. Bulletin (Hokkaido daigaku Kogakubu kenkyu hokoku),* 1985, No.125, p.111-121, In Japanese with English summary. 23 refs.
Ice crystal growth, Ice crystal structure, Crystal defects, Dislocations (materials), X ray diffraction

50-5794
Unusual types of single ice crystals originating from frozen cloud droplets.
Magono, C., Fujita, S., Taniguchi, T., *Journal of the atmospheric sciences,* Dec. 1979, 36(12), p.2497-2501, 17 refs.
Ice crystal growth, Ice crystal replicas, Supercooled clouds, Cloud droplets, Cold chambers

50-5795
Study on avalanche preventive steel structures.
Saito, S., et al, *NKK steel note,* 1963, No.3, p.57-66, 4 refs.
Avalanche engineering, Avalanche mechanics, Snow fences, Snow loads

50-5796
Some countermeasures against snow accretion and icing on small parabolic receiving antenna at higher angles of elevation.
Suzuki, M., Sha, K., Tsukawaki, T., *Terebijon gakkaishi (Institute of Television Engineers of Japan. Journal) (formerly Terebijon),* 1977, 31(5), p.401-407, In Japanese with English captions. 10 refs.
Ice accretion, Ice prevention, Snow removal, Antennas, Radomes

50-5797
Experiments of the charging mechanism of ice particles by the ion-capture process.
Asuma, Y., Kikuchi, K., *Hokkaido University. Faculty of Science. Journal. Series VII (Geophysics),* Feb. 1983, 7(3), p.239-250, 9 refs.
Ice crystal structure, Snow crystal structure, Ice electrical properties, Snow electrical properties, Cloud electrification, Ionization, Charge transfer

50-5798
New method for measuring snow crystals (snow crystal measuring system).
Kikuchi, K., Tsuboya, S., Asuma, Y., Inatsu, K., *Hokkaido University. Faculty of Science. Journal. Series VII (Geophysics),* Feb. 1982, 7(2), p.159-168, 4 refs.
Snow crystals, Falling snow, Snow optics, Ice crystal size, Photographic techniques, Precipitation gages

50-5799
Electrification mechanisms of snow crystals. Part III: on the size of electric charge carriers and their relaxation time in the atmosphere around the growing ice crystals.
Endoh, T., *Hokkaido University. Faculty of Science. Journal. Series VII (Geophysics),* Mar. 1981, 7(1), p.105-112, 4 refs.
Snow crystal growth, Snow electrical properties, Ice crystal growth, Ice electrical properties, Cloud electrification, Charge transfer, Thunderstorms

50-5800
Behavior of point defects in ice crystals revealed by X-ray topography.
Hondoh, T., Itoh, T., Higashi, A., Point defects and defect interactions in metals, Tokyo, University of Tokyo Press, 1982, p.599-601, 7 refs.
Ice crystal structure, Crystal defects, Dislocations (materials), X ray analysis

50-5801
Effect of acid snow and acid rain on the soils and others in Niigata Prefecture.
Taguchi, Y., Aoyama, K., Katoh, K., Endo, J., Yamamoto, M., *Niigata University. Research Institute for Hazards in Snowy Areas. Annual report,* 1995 (Pub. 1996), No.17, p.83-98, In Japanese with English summary. 33 refs.
Snow composition, Snow impurities, Air pollution, Scavenging, Soil pollution, Water pollution, Japan

50-5802
INACH expedition to Patriot Hills, Nov.-Dec. 1995. [Expedición de INACH a Patriot Hills, noviembre-diciembre 1995]
Casassa, G., *Boletín Antártico Chileno,* May 1996, 15(1), p.20-24, In Spanish with English summary. 2 refs.
Snow accumulation, Glacier ablation, Glacier surfaces, Glacier flow, Topographic surveys, Glacier thickness, Mapping, Low temperature research, Antarctica—Patriot Hills
The second Chilean glaciological expedition to Patriot Hills took place between Nov. 4 and Dec. 6, 1995. The following measurements were carried out: snow pit observations in a pit 5.20 m deep, velocity and surface elevation of the glacier by means of a topographic survey, ablation/accumulation with snow stakes, and ice thickness by means of an impulse radar, covering an area within 5 km of the base camp, which was deployed beside the blue icefield at Patriot Hills. The expedition was organized and sponsored by the Instituto Antártico Chileno (INACH), with the support of the Fuerza Aérea de Chile (FACH). (Auth.)

50-5803
SCAR report No.11, Feb. 1996.
Scientific Committee on Antarctic Research, Cambridge, UK, Scott Polar Research Institute, 1996, 43p.
Research projects, Climatic changes, Global change, Ice sheets, Sea ice, Air ice water interaction, Ozone, Ultraviolet radiation
This bulletin consists of 3 parts and 9 appendices. Part A presents the Executive Summary of GLOCHANT Activities from 1990 to 1995, outlining six thematic areas comprised in the SCAR science plan. Part B presents a report of the third meeting of the Group of Specialists (GLOCHANT III), held in Tokyo at the National Institute of Polar Research, Apr. 17-19 and Apr. 21, 1995. Part C presents a report of the joint meeting of GLOCHANT Planning Groups 1 and 5 and GoSSOE/CS-EASIZ, held in Tokyo at the National Institute of Polar Research, Apr. 19-21, 1995. The appendices include names and affiliations of members of the GLOCHANT Group of Specialists, the SCAR/GLOCHANT financial statements for 1994, and reports from Planning Groups 1 and 5, on the antarctic sea ice zone and biochemical cycles, respectively.

50-5804
Glaciological data collected by the 35th Japanese Antarctic Research Expedition during 1994-1995.
Shiraiwa, T., et al, *Japanese Antarctic Research Expedition. JARE data reports,* Mar. 1996, No.211, 69p., Refs. passim.
Traverses, Snow accumulation, Meteorological data, Meteorological instruments, Antarctica—Mizuho Station
This report presents an outline of field observations carried out by JARE-35 in 1994-1995. Data on net snow accumulation and surface meteorological data, obtained during 4 oversnow traverses and at Dome Fuji and Mizuho stations are discussed and presented in tables.

50-5805
Blasting frozen iron ore at Knob Lake.
Lang, L.C., *Canadian mining journal,* Aug. 1966, 7p., 4 refs.
Mining, Permafrost, Frozen rock strength, Rock excavation, Blasting, Canada—Quebec—Knob Lake

50-5806
Antarctic automatic weather station data for the calendar year 1994.
Keller, L.M., Weidner, G.A., Stearns, C.R., Whittaker, M.T., Holmes, R.E., Madison, University of Wisconsin, 1996, 34p.
Weather stations, Meteorological data, Air temperature, Atmospheric pressure, Wind velocity
A network of automatic weather station (AWS) units has been deployed to collect antarctic surface weather observations in support of specific meteorological research projects as well as operational activities at McMurdo Station. The 1994 network consisted of 45 installed AWS units providing observations on the Ross Ice Shelf, east of the Transantarctic Mountains and north of McMurdo to the Adélie Coast, along the Antarctic Peninsula and climatological locations such as the South Pole. Each unit measures air temperature, wind speed, and wind direction at a nominal height of 3 m, and air pressure at the electronics enclosure. Some AWS units also measure the relative humidity at 3 m and vertical air temperature difference between 0.5 and 3 m. Measurement heights relative to the actual surface at the site are nominal due to snow accumulation around the AWS unit.

50-5807
End of season report: Operation Deep Freeze 95/96.
U.S. Naval Support Force Antarctica, May 1996, var. p.
Research projects, Cold weather operation, Logistics, Military operation, Military facilities, Radio communication, Navigation, Transportation
This report describes the military support to the National Science Foundation in conjunction with the U.S. Antarctic Program. Support was provided by various organizations and commands from the Department of Defense and Department of Transportation under the operational control of Commander, U.S. Naval Support Force, Antarctica from June 1995 to Mar. 1996 as Operational DEEP FREEZE 95/96. The Naval Support Force provided command and control facilities and medical services to McMurdo Station residents and the logistic and communications pipeline for resupply of McMurdo, Amundsen-Scott, Byrd Surface Camp and other seasonal field camps, plus support for the nearby New Zealand station at Scott Base, the Italian station at Terra Nova Bay and the Russian station at Vostok. This report provides a summary of significant events during the operating period.

50-5808
Conditioning and dewatering of sludges from facultative aerated lagoons using natural freeze-thaw: test results. [Conditionnement de déhydratation de boues d'étangs aérés facultatifs à l'aide du gel-dégel naturel: résultats d'essais]
Desjardins, M.A., Brière, F.G., *Canadian journal of civil engineering,* Apr. 1996, 23(2), p.323-339, In French with English summary. 23 refs.
Sludges, Porous materials, Waste treatment, Water treatment, Ponds, Freeze thaw cycles, Freeze thaw tests, Water transport, Desiccation, Grain size, Fluid dynamics

50-5809
1991 ice jamming along the Saint John River: a case study.
Beltaos, S., Burrell, B., Ismail, S., *Canadian journal of civil engineering,* Apr. 1996, 23(2), p.381-394, With French summary. 14 refs.
River flow, Ice jams, Ice breakup, Flooding, Water level, Ice water interface, Ice cover thickness, Profiles, Statistical analysis, Ice cover effect, Flood forecasting, Mathematical models, Canada—New Brunswick—St. John River

50-5810
Doppler radar for continuous remote measurement of river ice velocity.
Ferrick, M.G., Yankielun, N.E., Nelson, D.F., MP 3844, *Canadian journal of civil engineering,* Apr. 1996, 23(2), p.408-417, With French summary. 12 refs. For another version see 50-4247.
River flow, River ice, Ice floes, Ice breakup, Frazil ice, Velocity measurement, Radar echoes, Backscattering, Imaging, Accuracy, Correlation
River ice velocity measurements are fundamental to analyses of river ice dynamics. Ice velocity measurement with a continuous-wave Doppler radar system having real-time data acquistion and digital signal processing capability was evaluated during a river breakup and a frazil run on the Connecticut River. This system can be rapidly deployed, requires minimal operator interaction, will continuously acquire, process, store, and display ice velocity data, and does not depend on visibility conditions. In parallel, video records of ice motion were obtained at the same location for later manual processing and comparison with the radar results. The authors describe the Doppler radar system and obtain bounding estimates of possible measurement errors. The principal error in Doppler ice velocity measurement is due to the beamwidth of the radar antenna, and an analytical method is developed to minimize this error. Measured ice velocities ranged from 1 to 2.5 m/s during the river breakup, and from 0.5 to 0.65 m/s in the frazil run. Quantitative comparisons between the radar and video results show fundamental agreement between these measurement methods, and demonstrate that Doppler radar is an effective, efficient, and precise tool for obtaining river ice velocities over the full range of possible ice and velocity conditions.

50-5811
Low temperature behaviour of CFRP prestressed concrete beams.
Bryan, P.E., Green, M.F., *Canadian journal of civil engineering,* Apr. 1996, 23(2), p.464-470, With French summary. 8 refs.
Prestressed concretes, Concrete structures, Steels, Composite materials, Concrete slabs, Concrete durability, Low temperature tests, Tensile properties, Ultimate strength, Mechanical tests, Static loads, Temperature effects

50-5812
Laboratory tests for ice interaction with steel booms.
Timco, G.W., Cornett, A.M., *Canadian journal of civil engineering,* Apr. 1996, 23(2), p.560-566, With French summary. 9 refs.
Channels (waterways), River ice, Flexural strength, Ice floes, Ice control, Ice booms, Steel structures, Ice solid interface, Ice loads, Mechanical tests, Performance, Design criteria

50-5813
Crystallization of ice in aqueous solutions of glycerol and dimethyl sulfoxide. 1. A comparison of mechanisms.
Hey, J.M., Macfarlane, D.R., *Cryobiology,* Apr. 1996, 33(2), p.205-216, 20 refs.
Cryobiology, Solutions, Phase transformations, Heterogeneous nucleation, Ice crystal growth, Vitreous ice, Temperature measurement, Nucleation rate, Ion density (concentration), Temperature effects, Thermal analysis

50-5814

Analysis of thermal stresses around a cryosurgical probe.

Rabin, Y., Steif, P.S., *Cryobiology,* Apr. 1996, 33(2), p.276-290, 36 refs.

Cryobiology, Cryogenics, Probes, Instruments, Frozen liquids, Cooling rate, Freezing front, Phase transformations, Damage, Thermal stresses, Ice solid interface, Temperature distribution, Thermal conductivity, Mathematical models, Plastic deformation

50-5815

Hydrogeochemistry of the Fraser River, British Columbia: seasonal variation in major and minor components.

Cameron, E.M., *Journal of hydrology,* July 1996, 182(2-4), p.209-225, 21 refs.

Hydrogeochemistry, River basins, Watersheds, Suspended sediments, Water pollution, Sampling, Snowmelt, Meltwater, Seasonal variations, Solubility, Statistical analysis, Ion density (concentration), Environmental impact, Canada—British Columbia—Fraser River

50-5816

Chlorophyll distribution in a body of fresh water covered with ice.

Zavoruev, V.V., Levin, L.A., *Akademiia nauk. Doklady. Biological sciences,* May-June 1996, Vol.348, p.273-275, Translated from Doklady Akademii nauk. 7 refs.

Limnology, Reservoirs, Microbiology, Biomass, Algae, Photosynthesis, Migration, Chlorophylls, Ice water interface, Ice cover effect, Snow cover effect, Ice sampling, Ice melting

50-5817

Shear moduli and damping in frozen and unfrozen clay by resonant column tests.

Al-Hunaidi, M.O., Chen, P.A., Rainer, J.H., Tremblay, M., *Canadian geotechnical journal,* June 1996, 33(3), p.510-514, With French summary. 4 refs.

Frozen ground mechanics, Frozen ground strength, Soil tests, Clay soils, Shear strain, Dynamic loads, Dynamic properties, Vibration, Resonance, Damping

50-5818

Biogeochemical cycling of Zn, Cu, Fe, Mn, and dissolved organic C in a seasonally anoxic lake.

Hamilton-Taylor, J., Davison, W., Morfett, K., *Limnology and oceanography,* May 1996, 41(3), p.408-418, 48 refs.

Limnology, Geochemical cycles, Lake water, Metals, Solubility, Water chemistry, Sedimentation, Ice water interface, Ice cover effect, Sampling, Seasonal variations

50-5819

Molecular characterization of suspended and sedimentary organic matter in an arctic delta.

Peulvé, S., Sicre, M.A., Saliot, A., De Leeuw, J.W., Baas, M., *Limnology and oceanography,* May 1996, 41(3), p.488-497, 52 refs.

Oceanography, Estuaries, Deltas, Surface waters, Suspended sediments, Organic nuclei, Geochemistry, Sampling, Spectroscopy, Chemical analysis, Ice water interface, Ice cover effect

50-5820

Hydrogen peroxide formation: the interaction of ultraviolet radiation and dissolved organic carbon in lake waters along a 43-75° gradient.

Scully, N.M., McQueen, D.J., Lean, D.R.S., Cooper, W.J., *Limnology and oceanography,* May 1996, 41(3), p.540-548, 11 refs.

Limnology, Lake water, Water chemistry, Organic nuclei, Suspended sediments, Radiation absorption, Ultraviolet radiation, Photochemical reactions, Sampling, Simulation, Environmental impact, Canada—Northwest Territories—Ellesmere Island

50-5821

Electric fields and charges near 0°C in stratiform clouds.

Shepherd, T.R., Rust, W.D., Marshall, T.C., *Monthly weather review,* May 1996, 124(5), p.919-938, 33 refs.

Clouds (meteorology), Cloud physics, Cloud electrification, Electric fields, Ice melting, Sounding, Radar echoes, Brightness, Charge transfer, Ice water interface, Thermodynamic properties

50-5822

Forest resources of Qinghai. [Qinghai senlin ziyuan]

Sun, X.R., ed, Liu, G.K., ed, Gao, Y.H., ed, Wei, Z.F., ed, Lu, W.Z., ed, Xining, Qinghai renmin chubanshe (Qinghai People's Publishing House), 1988, 101p., In Chinese. 24 refs.

DLC SD222.T75C54 1988 Orien China

Forestry, Forest ecosystems, Plant ecology, Vegetation patterns, Natural resources, Economic development, Regional planning, China—Qinghai Province

50-5823

Evaluation of forest resources and distribution of production and construction in Xinjiang. [Xinjiang senlin ziyuan pingjia ji shengchan jianshe buju]

Xinjiang Resources Development Comprehensive Survey Team of the Chinese Academy of Sciences (Zhongguo kexue yuan Xinjiang ziyuan kaifa zonghe kaochadui), Beijing, Kexue chubanshe (Science Press), 1989, 80p., In Chinese. 4 refs.

DLC SD222.S56C47 1985 Orien China

Forestry, Forest land, Vegetation patterns, Natural resources, Economic development, Regional planning, China—Xinjiang

50-5824

Automatic ice motion retrieval from ERS-1 SAR images using the optical flow method.

Sun, Y., *International journal of remote sensing,* July 20, 1996, 17(11), p.2059-2087, 37 refs.

Sea ice distribution, Pack ice, Drift, Ice deformation, Ice surveys, Synthetic aperture radar, Image processing, Classifications, Computerized simulation, Radar tracking, Mathematical models

50-5825

Degree of rock surface weathering on fjell summits in northern Finland: implications for the thermal regime of the last ice sheet.

McCarroll, D., Autio, J., Heikkinen, O., Koutaniemi, L., *Boreas,* Mar. 1996, 25(1), p.1-7, 32 refs.

Pleistocene, Glacier beds, Bedrock, Lithology, Glacial geology, Glacial erosion, Weathering, Rock properties, Hardness tests, Striations, Ice solid interface, Ice cover effect, Geochronology, Finland

50-5826

Composite stable isotope records from a Late Weichselian lacustrine sequence at Grænge, Lolland, Denmark: evidence of Allerød and Younger Dryas environments.

Hammarlund, D., Buchardt, B., *Boreas,* Mar. 1996, 25(1), p.8-22, 72 refs.

Quaternary deposits, Pleistocene, Paleoclimatology, Climatic changes, Global warming, Lacustrine deposits, Stratigraphy, Isotope analysis, Oxygen isotopes, Radioactive age determination, Correlation, Denmark

50-5827

Subglacial and subaqueous processes near a glacier grounding line: sedimentological evidence from a former ice-dammed lake, Achnasheen Scotland.

Benn, D.I., *Boreas,* Mar. 1996, 25(1), p.23-36, 76 refs.

Pleistocene, Ice sheets, Glacial geology, Glacial lakes, Lacustrine deposits, Moraines, Deformation, Sedimentation, Lithology, Grain size, Ice solid interface, Subglacial drainage, United Kingdom—Scotland

50-5828

Early stages of till genesis: an example from Fanore, County Clare, Ireland.

Croot, D.G., Sims, P.C., *Boreas,* Mar. 1996, 25(1), p.37-46, 23 refs.

Pleistocene, Glacial geology, Tectonics, Glacial erosion, Bedrock, Deformation, Lithology, Soil texture, Rock properties, Ice solid interface, Geomorphology, Ireland

50-5829

Post glacial emergence and the Tapes transgression, north-central Kola Peninsula, Russia.

Snyder, J.A., Korsun, S.A., Forman, S.L., *Boreas,* Mar. 1996, 25(1), p.47-56, 35 refs.

Pleistocene, Geomorphology, Marine geology, Marine deposits, Stratigraphy, Glacial geology, Ice loads, Shoreline modification, Sea level, Radioactive age determination, Geochronology, Russia—Kola Peninsula

50-5830

Moraine ridges formed from subglacial frozen-on sediment slabs and their differentiation from push moraines.

Krüger, J., *Boreas,* Mar. 1996, 25(1), p.57-63, 21 refs.

Glacial geology, Glacier oscillation, Glacial hydrology, Subglacial drainage, Ice edge, Geomorphology, Moraines, Classifications, Sediment transport, Ice solid interface, Mass transfer, Seasonal variations

50-5831

Water vapor saturation at low altitudes around Mars aphelion: a key to Mars climate?

Clancy, R.T., et al, *Icarus,* July 1996, 122(1), p.36-62, Refs. p.59-62.

Mars (planet), Extraterrestrial ice, Spectroscopy, Climatology, Cloud cover, Atmospheric composition, Water vapor, Saturation, Moisture transfer, Ice sheets, Ice vapor interface, Ice cover effect, Condensation

50-5832

Erosion on Titan: past and present.

Lorenz, R.D., Lunine, J.I., *Icarus,* July 1996, 122(1), p.79-91, 62 refs.

Extraterrestrial ice, Satellites (natural), Atmospheric boundary layer, Geomorphology, Regolith, Paleoclimatology, Ice sublimation, Ice erosion, Glacial erosion, Landscape development

50-5833

Production and chemical analysis of cometary ice tholins.

McDonald, G.D., Whited, L.J., DeRuiter, C., Khare, B.N., Patnaik, A., Sagan, C., *Icarus,* July 1996, 122(1), p.107-117, 57 refs.

Extraterrestrial ice, Simulation, Ice spectroscopy, Infrared spectroscopy, Ice composition, Ice sublimation, Polymers, Classifications, Photochemical reactions, Geochemistry, Spectra, Ice detection

50-5834

Enrichment of CO over N_2 by their trapping in amorphous ice and implications to comet P/Halley.

Notesco, G., Bar-Nun, A., *Icarus,* July 1996, 122(1), p.118-121, 19 refs.

Extraterrestrial ice, Amorphous ice, Ice physics, Ice sublimation, Simulation, Ice composition, Vapor transfer

50-5835

Regional water balance modelling in the NOPEX area: development and application of monthly water balance models.

Xu, C.Y., Seibert, J., Halldin, S., *Journal of hydrology,* May 15, 1996, 180(1-4), p.211-236, 28 refs.

Hydrologic cycle, Water balance, Watersheds, River flow, Snowmelt, Snow accumulation, Seasonal variations, Evapotranspiration, Mathematical models, Statistical analysis, Runoff forecasting

50-5836

Effects of seed treatments on germination.

Diemand, D., Palazzo, A.J., Sharif, M., SR 94-29, *U.S. Army Cold Regions Research and Engineering Laboratory. Special report*, Sep. 1994, 20p., ADA-286 227, 12 refs.

Revegetation, Grasses, Plant ecology, Plants (botany)

The goal of this study was to identify ways to stimulate the germination of seeds of various grasses and legumes of potential value in revegetation of army training grounds or similar damaged lands. Ten treatments (including a control) were used on ten species of plants. Four of the treatments used plant hormones (kinetin and gibberellic acid), and five were environmental, including cold exposure, hot water soaks and cold water soaks. Of these the gibberellic acid treatments yielded the most spectacular results, increasing the germination rate more than three times that of the control in some cases. The environmental treatments were relatively ineffective, although the hot water soaks and the cold exposure often suppressed germination somewhat. Microbial contamination was much reduced by the hot water soak, which may be beneficial in some circumstances.

50-5837

Snow-mass intercomparisons in the boreal forests from general circulation models and remotely sensed data sets.

Foster, J., et al, *Polar record*, July 1996, 32(182), p.199-208, 23 refs.

Taiga, Forest canopy, Forest land, Snow surveys, Snow cover distribution, Snow depth, Snow accumulation, Snow density, Computerized simulation, Spaceborne photography

50-5838

Arctic wasteland: a perspective on arctic pollution.

Davis, N., *Polar record*, July 1996, 32(182), p.237-248, Refs. p.245-248.

Air pollution, Water pollution, Polar atmospheres, Ocean environments, Nutrient cycle, Scavenging, Ice cover effect, Drift

50-5839

Collected papers on forest management in the cold temperate zone. [Han wendai senlin jingying wenji]

Lou, Y.H., ed, Wang, S.X., ed, Beijing, Zhongguo linye chubanshe (China Forestry Publishing House), 1991, 211p., In Chinese. Refs. passim. For selected papers see 50-5840 through 50-5855.

DLC SD643.H36 1991 Orien China

Forestry, Plant ecology, Revegetation, Vegetation patterns, Trees (plants), Phenology, Acclimatization, China—Greater Khingan Range

50-5840

Study on predicting the fruit bearing patterns of Dahurian larch. [Xingan luoyesong jieshi guilu ji qi yubao fangfa de yanjiu]

Liu, X.T., Xu, G.Q., Lin, Y.K., Han wendai senlin jingying wenji (Collected papers on forest management in the cold temperate zone). Edited by Y.H. Lou and S.X. Wang, Beijing, Zhongguo linye chubanshe (China Forestry Publishing House), 1991, p.10-15, In Chinese.

DLC SD643.H36 1991 Orien China

Trees (plants), Plant ecology, Plant physiology, Phenology, Forestry, Revegetation, Statistical analysis, China—Greater Khingan Range

50-5841

Study on shortening the seedling growing period for Dahurian larch (*Larix gmelinii*). [Suoduan Xingan luoyesong yumiao zhouqi de yanjiu]

Zhang, W.Y., Han wendai senlin jingying wenji (Collected papers on forest management in the cold temperate zone). Edited by Y.H. Lou and S.X. Wang, Beijing, Zhongguo linye chubanshe (China Forestry Publishing House), 1991, p.20-24, In Chinese.

DLC SD643.H36 1991 Orien China

Trees (plants), Plant ecology, Plant physiology, Forestry, Revegetation, Phenology, Acclimatization, China—Greater Khingan Range

50-5842

Problems of natural reforestation of Dahurian larch (*Larix gmelinii*). [Xingan luoyesong lin de tianran gengxin wenti]

Lou, Y.H., Han wendai senlin jingying wenji (Collected papers on forest management in the cold temperate zone). Edited by Y.H. Lou and S.X. Wang, Beijing, Zhongguo linye chubanshe (China Forestry Publishing House), 1991, p.32-49, In Chinese. 14 refs.

DLC SD643.H36 1991 Orien China

Trees (plants), Plant ecology, Vegetation patterns, Revegetation, Forestry, Phenology, Acclimatization, China—Greater Khingan Range

50-5843

Study on natural regeneration and cutting and growth cycles in the forest regions of the Greater Khingan Range. [Da Xinganling linqu tianran gengxin tedian ji caiyu fangshi de tantao]

Zhou, W.Q., Han wendai senlin jingying wenji (Collected papers on forest management in the cold temperate zone). Edited by Y.H. Lou and S.X. Wang, Beijing, Zhongguo linye chubanshe (China Forestry Publishing House), 1991, p.50-58, In Chinese. 9 refs.

DLC SD643.H36 1991 Orien China

Trees (plants), Plant ecology, Vegetation patterns, Revegetation, Forestry, Forest land, China—Greater Khingan Range

50-5844

Study on the problem of cutting and regeneration in natural stands of Dahurian larch (*Larix gmelinii*). [Xingan luoyesong tianran lin caifa gengxin wenti de diaocha yanjiu]

Tu, C.H., Zhang, H.W., Li, D.X., Liu, H.W., Zhu, W.C., Han wendai senlin jingying wenji (Collected papers on forest management in the cold temperate zone). Edited by Y.H. Lou and S.X. Wang, Beijing, Zhongguo linye chubanshe (China Forestry Publishing House), 1991, p.66-76, In Chinese.

DLC SD643.H36 1991 Orien China

Trees (plants), Plant ecology, Vegetation patterns, Revegetation, Forestry, Forest land, China—Greater Khingan Range

50-5845

Study on artificial acceleration of natural regeneration. [Rengong cujin tianran gengxin jishu de tantao]

Lou, Y.H., Han wendai senlin jingying wenji (Collected papers on forest management in the cold temperate zone). Edited by Y.H. Lou and S.X. Wang, Beijing, Zhongguo linye chubanshe (China Forestry Publishing House), 1991, p.77-80, In Chinese.

DLC SD643.H36 1991 Orien China

Trees (plants), Plant ecology, Vegetation patterns, Revegetation, Forestry, Forest land, China—Greater Khingan Range

50-5846

Experiments on afforestation by aerial seeding in the cold temperate zone. [Han wendai linqu feibo zaolin shiyan]

Wang, T.X., Wang, S.X., Yao, L.B., Chen, Q.J., Han wendai senlin jingying wenji (Collected papers on forest management in the cold temperate zone). Edited by Y.H. Lou and S.X. Wang, Beijing, Zhongguo linye chubanshe (China Forestry Publishing House), 1991, p.86-88, In Chinese.

DLC SD643.H36 1991 Orien China

Plant ecology, Vegetation patterns, Revegetation, Forestry, Land reclamation, China—Greater Khingan Range

50-5847

Research report on experimental afforestation of Dahurian larch (*Larix gmelinii*) in autumn. [Xingan luoyesong qiuji zaolin shiyan yanjiu baogao]

Wang, T.X., Yao, L.B., Cheng, H.Z., Han wendai senlin jingying wenji (Collected papers on forest management in the cold temperate zone). Edited by Y.H. Lou and S.X. Wang, Beijing, Zhongguo linye chubanshe (China Forestry Publishing House), 1991, p.89-95, In Chinese.

DLC SD643.H36 1991 Orien China

Trees (plants), Plant ecology, Vegetation patterns, Revegetation, Forestry, Phenology, Acclimatization, China—Greater Khingan Range

50-5848

Study on controlling the density of natural middle-aged and young growth stands of Dahurian larch (*Larix gmelinii*). [Xingan luoyesong tianran zhong- youlin linfen midu kongzhi jishu de yanjiu]

Zhu, L.Y., Cheng, H.Z., Han wendai senlin jingying wenji (Collected papers on forest management in the cold temperate zone). Edited by Y.H. Lou and S.X. Wang, Beijing, Zhongguo linye chubanshe (China Forestry Publishing House), 1991, p.98-102, In Chinese.

DLC SD643.H36 1991 Orien China

Trees (plants), Plant ecology, Vegetation patterns, Revegetation, Forestry, China—Greater Khingan Range

50-5849

Study on spaced cutting to promote growth in natural young and middle-aged stands of Dahurian larch (*Larix gmelinii*). [Xingan luoyesong tianran you- zhonglin fuyu jianfa jishu de yanjiu]

Liu, X.T., Zhou, Z.Y., Li, X.F., Han wendai senlin jingying wenji (Collected papers on forest management in the cold temperate zone). Edited by Y.H. Lou and S.X. Wang, Beijing, Zhongguo linye chubanshe (China Forestry Publishing House), 1991, p.103-107, In Chinese.

DLC SD643.H36 1991 Orien China

Trees (plants), Plant ecology, Vegetation patterns, Revegetation, Forestry, China—Greater Khingan Range

50-5850

Study on the introduction of *Larix olgensis* and its northwestern boundary in the Greater Khingan Range. [Da Xinganling linqu changbai luoyesong yinzhong ji qi xibei jiexian de yanjiu]

Liu, X.T., Liu, H.J., Han wendai senlin jingying wenji (Collected papers on forest management in the cold temperate zone). Edited by Y.H. Lou and S.X. Wang, Beijing, Zhongguo linye chubanshe (China Forestry Publishing House), 1991, p.108-113, In Chinese.

DLC SD643.H36 1991 Orien China

Trees (plants), Introduced plants, Plant ecology, Vegetation patterns, Revegetation, Forestry, China—Greater Khingan Range

50-5851

Preliminary study on the growth rate of major forest communities in the Greater Khingan Range. [Da Xinganling linqu zhuyao senlin qunluo shengzhangliang de chubu yanjiu]

Gu, Y.C., Han wendai senlin jingying wenji (Collected papers on forest management in the cold temperate zone). Edited by Y.H. Lou and S.X. Wang, Beijing, Zhongguo linye chubanshe (China Forestry Publishing House), 1991, p.123-127, In Chinese.

DLC SD643.H36 1991 Orien China

Trees (plants), Plant ecology, Vegetation patterns, Forest ecosystems, Growth, China—Greater Khingan Range

50-5852

Wild flowering plants of the Greater Khingan Range and their value for park projects. [Da Xinganling yesheng huahui ji qi zai yuanlin gongzuo zhong de jiazhi]

Lu, Z., Liu, X.T., Chen, Y., Han wendai senlin jingying wenji (Collected papers on forest management in the cold temperate zone). Edited by Y.H. Lou and S.X. Wang, Beijing, Zhongguo linye chubanshe (China Forestry Publishing House), 1991, p.152-158, In Chinese.

DLC SD643.H36 1991 Orien China

Plant ecology, Vegetation patterns, Revegetation, Phenology, Acclimatization, China—Greater Khingan Range

50-5853

Study on the causes and preventive measures of the disastrous forest fire of May 6, 1987, in the Greater Khingan Range. [Da Xinganling "5 · 6" teda senlin huozai chengyin ji yufang cuoshi de tantao]

Lou, Y.H., Han wendai senlin jingying wenji (Collected papers on forest management in the cold temperate zone). Edited by Y.H. Lou and S.X. Wang, Beijing, Zhongguo linye chubanshe (China Forestry Publishing House), 1991, p.194-200, In Chinese. 2 refs.

DLC SD643.H36 1991 Orien China

Forest fires, Forest ecosystems, Plant ecology, Vegetation factors, Environmental impact, Forestry, China—Greater Khingan Range

50-5854

Brief look at the plan to restore the burned forest area in the northern Greater Khingan Range. [Da Xinganling beibu linqu huoshao jidi senlin huifu guihua qianjian]

Cheng, H.Z., Han wendai senlin jingying wenji (Collected papers on forest management in the cold temperate zone). Edited by Y.H. Lou and S.X. Wang, Beijing, Zhongguo linye chubanshe (China Forestry Publishing House), 1991, p.204-208, In Chinese.

DLC SD643.H36 1991 Orien China

Forest fires, Revegetation, Land reclamation, China—Greater Khingan Range

50-5855

Report on reforestation of the May 6, 1987 forest fire disaster area in the Greater Khingan Range. [Da Xinganling "5 · 6" teda senlin huozaiqu huifu senlin de kaocha baogao]

Wang, S.X., Han wendai senlin jingying wenji (Collected papers on forest management in the cold temperate zone). Edited by Y.H. Lou and S.X. Wang, Beijing, Zhongguo linye chubanshe (China Forestry Publishing House), 1991, p.209-211, In Chinese.

DLC SD643.H36 1991 Orien China

Forest fires, Revegetation, Land reclamation, China—Greater Khingan Range

50-5856

Arctic Ocean deep water masses in the western Iceland Sea.

Buch, E., Malmberg, S.A., Kristmannsson, S.S., *Journal of geophysical research,* May 15, 1996, 101(C5), p.11,965-11,973, 9 refs.

Oceanography, Ocean currents, Oceanographic surveys, Hydrography, Water temperature, Water transport, Convection, Iceland Sea

50-5857

Development of seasonal pack ice in the Beaufort Sea during the winter of 1991-1992: a view from below.

Melling, H., Riedel, D.A., *Journal of geophysical research,* May 15, 1996, 101(C5), p.11,975-11,991, 30 refs.

Oceanography, Pack ice, Ice growth, Freezeup, Acoustic measurement, Underwater acoustics, Moorings, Ice density, Ice water interface, Ice bottom surface, Topographic features, Profiles, Seasonal variations, Beaufort Sea

50-5858

Temperature dependence of frost flower growth on laboratory sea ice and the effect of the flowers on infrared observations of the surface.

Martin, S., Yu, Y.L., Drucker, R., *Journal of geophysical research,* May 15, 1996, 101(C5), p.12,111-12,125, 11 refs.

Oceanography, Sea ice, Young ice, Ice surface, Hoarfrost, Ice crystal growth, Ice crystal size, Surface temperature, Radiometry, Infrared radiation, Ice optics, Ice vapor interface, Insulation, Simulation, Temperature effects

50-5859

Glacial activity and paraglacial landsliding in the Devensian Lateglacial: evidence from Craig Cerrig-gleisiad and Fan Dringarth, Fforest Fawr (Brecon Beacons), South Wales.

Shakesby, R.A., Matthews, J.A., *Geological journal,* June 1996, 31(2), p.143-157, 54 refs.

Pleistocene, Glacial geology, Glacial erosion, Geomorphology, Landforms, Cirque glaciers, Moraines, Landslides, Mass flow, Lithology, Paleoclimatology, United Kingdom—Wales

50-5860

Conditional probability distributions of annual variations in the runoff of rivers with snowmelt alimentation.

Bolgov, M.V., Ratkovich, D.IA., *Water resources,* May-June 1996, 23(3), p.235-240, Translated from Vodnye resursy. 4 refs.

Snow hydrology, Watersheds, Snowmelt, River flow, Alimentation, Runoff forecasting, Statistical analysis, Seasonal variations, Mathematical models, Correlation

50-5861

On the need to take into account the possibility of global climate warming in the design of buildings constructed in permafrost soil.

Khrustalev, L.N., *Hydrotechnical construction,* May 1996, 29(11), p.653-661, Translated from Gidrotekhnicheskoe stroitel'stvo. 7 refs.

Buildings, Cold weather construction, Global warming, Permafrost beneath structures, Permafrost transformation, Permafrost preservation, Ground thawing, Foundations, Design criteria, Mathematical models, Temperature control

50-5862

Ice-sheet growth and high-latitudes sea-surface temperature.

Berger, A., Gallée, H., Li, X.S., Dutrieux, A., Loutre, M.F., *Climate dynamics,* May 1996, 12(7), p.441-448, 28 refs.

Paleoclimatology, Oceanography, Water temperature, Surface temperature, Ice sheets, Sea ice distribution, Ice cover thickness, Ice growth, Ice cover effect, Ice volume, Drill core analysis, Glacier oscillation, Insolation, Simulation

50-5863

Sensitivity of the Asian summer monsoon to an anomalous Eurasian snow cover within the Météo-France GCM.

Douville, H., Royer, J.F., *Climate dynamics,* May 1996, 12(7), p.449-466, 48 refs.

Climatology, Precipitation (meteorology), Snow cover effect, Atmospheric boundary layer, Atmospheric circulation, Wind direction, Snow air interface, Surface energy, Models, Simulation, Hydrologic cycle

50-5864

Impact of sub-grid scale sea-ice inhomogeneities on the performance of the atmospheric general circulation model ECHAM3.

Grötzner, A., Sausen, R., Claussen, M., *Climate dynamics,* May 1996, 12(7), p.477-496, 45 refs.

Climatology, Atmospheric circulation, Sea ice distribution, Ice cover effect, Air ice water interaction, Heat flux, Turbulent boundary layer, Polynyas, Mathematical models, Ice models, Simulation

50-5865

Fluorimetric assessment of *Pseudomonas fluorescens* viability after freeze-thawing using ethidium bromide.

Puchkov, E.O., Melkozernov, A.N., *Letters in applied microbiology,* Dec. 1995, 21(6), p.368-372, 20 refs.

Microbiology, Cryobiology, Freeze thaw tests, Bacteria, Permeability, Viability, Probes, Temperature effects, Luminescence, Cold tolerance, Photometry

50-5866

Effect of X-radiation on the plastic deformation of ice.

Hu, X.H., Liu, F.P., Baker, I., Black, D., *Philosophical magazine A,* May 1996, 73(5), p.1355-1361, 25 refs.

Ice physics, Ice deformation, Plastic deformation, X ray analysis, Ice creep, Ice optics, Radiation absorption, Ice crystal structure, Defects, Orientation, Topographic features

50-5867

Nucleation of microcracks in ice cubes compressed equally on all boundaries.

Weiss, J., Schulson, E.M., Frost, H.J., *Philosophical magazine A,* May 1996, 73(5), p.1385-1400, 23 refs.

Ice physics, Nucleation, Crack propagation, Ice microstructure, Anisotropy, Compressive properties, Ice deformation, Sliding, Ice solid interface, Strain tests, Stress concentration, Simulation

50-5868

Siberian CO_2 efflux in winter as a CO_2 source and cause of seasonality in atmospheric CO_2.

Zimov, S.A., et al, *Climatic change,* May 1996, 33(1), p.111-120, 31 refs.

Climatology, Forest tundra, Forest ecosystems, Tundra climate, Soil air interface, Thermal regime, Vapor transfer, Carbon dioxide, Atmospheric composition, Seasonal variations, Permafrost transformation, Russia—Siberia

50-5869

Numerical case study of a polar low in the Labrador Sea.

Mailhot, J., Hanley, D., Bilodeau, B., Hertzman, O., *Tellus,* May 1996, 48A(3), p.383-402, 36 refs.

Synoptic meteorology, Climatology, Atmospheric boundary layer, Polar atmospheres, Marine atmospheres, Atmospheric disturbances, Air masses, Convection, Wind velocity, Spaceborne photography, Mathematical models, Weather forecasting, Labrador Sea

50-5870

Estimation of surface albedo from NOAA AVHRR data in high latitudes.

Laine, V., Heikinheimo, M., *Tellus,* May 1996, 48A(3), p.424-441, 20 refs.

Climatology, Radiation balance, Albedo, Spaceborne photography, Snow cover effect, Ice cover effect, Radiometry, Image processing

50-5871

Role of atmospheric waves in the laminated structure of ozone profiles at high latitude.

Teitelbaum, H., Moustaoui, M., Ovarlez, J., Kelder, H., *Tellus,* May 1996, 48A(3), p.442-455, 22 refs.

Climatology, Polar atmospheres, Stratosphere, Atmospheric composition, Stratification, Ozone, Wind velocity, Gravity waves, Wave propagation, Sounding, Profiles

50-5872

Abstracts.

International Symposium on Okhotsk Sea and Sea Ice, 11th, Mombetsu, Hokkaido, Japan, Feb. 25-28, 1996, Mombetsu, Okhotsk Sea and Cold Ocean Research Association, 1996, 395p., In English and Japanese. Refs. passim. For selected papers see 50-5873 through 50-5910.

Ice surveys, Sea ice distribution, Ice conditions, Ice cover thickness, Ice cover strength, Ice cover effect, Drift, Ice solid interface, Ice loads, Ice pressure, Ice friction, Offshore structures

50-5873

Construction of the Okhotsk frozen-sea observation tower.

Sato, Y., Abe, T., Shibaki, N., Osanai, S., Narita, M., International Symposium on Okhotsk Sea and Sea Ice, 11th, Mombetsu, Hokkaido, Japan, Feb. 25-28, 1996. Abstracts, Mombetsu, Okhotsk Sea and Cold Ocean Research Association, 1996, p.3-9, In Japanese with English summary.

Towers, Offshore structures, Hydraulic structures, Cold weather construction, Ocean environments, Subglacial observations, Ice loads, Ice control, Okhotsk Sea, Japan—Hokkaido

50-5874

Experimental voyage through Northern Sea Route.

Yamaguchi, H., Izumiyama, K., Kamesaki, K., Kishi, S., Ishikawa, S., International Symposium on Okhotsk Sea and Sea Ice, 11th, Mombetsu, Hokkaido, Japan, Feb. 25-28, 1996. Abstracts, Mombetsu, Okhotsk Sea and Cold Ocean Research Association, 1996, p.10-15, In Japanese with English summary. 2 refs. For another version in English see 50-4425.

Ships, Icebreakers, Ice navigation, Ice routing, Route surveys, Northern Sea Route

50-5875

Experimental studies on ice forces on conical structures using segmented model.

Kato, K., Adachi, M., Kishimoto, H., Ichikawa, T., International Symposium on Okhotsk Sea and Sea Ice, 11th, Mombetsu, Hokkaido, Japan, Feb. 25-28, 1996. Abstracts, Mombetsu, Okhotsk Sea and Cold Ocean Research Association, 1996, p.16-22, In Japanese with English summary. 3 refs.

Offshore structures, Ice solid interface, Ice loads, Ice pressure, Ice friction, Ice override, Ice pileup, Ice cover strength, Environmental tests

50-5876

Local pressure characteristics by indentor with segmented local ice pressure panels.

Kamesaki, K., Yamauchi, Y., International Symposium on Okhotsk Sea and Sea Ice, 11th, Mombetsu, Hokkaido, Japan, Feb. 25-28, 1996. Abstracts, Mombetsu, Okhotsk Sea and Cold Ocean Research Association, 1996, p.23-29, In Japanese with English summary. 5 refs.

Ice solid interface, Ice loads, Ice pressure, Ice friction, Ice cover strength, Ice deformation, Ice breaking, Offshore structures

50-5877

Experimental study of ice load on conical structures.

Ohta, M., Ishikawa, A., Kawasaki, T., International Symposium on Okhotsk Sea and Sea Ice, 11th, Mombetsu, Hokkaido, Japan, Feb. 25-28, 1996. Abstracts, Mombetsu, Okhotsk Sea and Cold Ocean Research Association, 1996, p.30-35, In Japanese. 5 refs.

Ice solid interface, Ice loads, Ice pressure, Ice friction, Ice cover strength, Ice deformation, Offshore structures, Environmental tests

50-5878

Experimental study on velocity dependence of ice failure load using 2-dimensional ship model.

Adachi, M., Kato, K., Usami, A., Yamaguchi, H., International Symposium on Okhotsk Sea and Sea Ice, 11th, Mombetsu, Hokkaido, Japan, Feb. 25-28, 1996. Abstracts, Mombetsu, Okhotsk Sea and Cold Ocean Research Association, 1996, p.36-41, 3 refs.

Icebreakers, Ice navigation, Ice solid interface, Ice loads, Metal ice friction, Ice cover strength, Ice breaking, Environmental tests

50-5879

Monographs of vertical ice load acting on vertical structure with elliptical cross-section due to changes of water level.

Nishihata, A., Kioka, S., Narita, K., Terashima, T., Saeki, H., International Symposium on Okhotsk Sea and Sea Ice, 11th, Mombetsu, Hokkaido, Japan, Feb. 25-28, 1996. Abstracts, Mombetsu, Okhotsk Sea and Cold Ocean Research Association, 1996, p.42-46, In Japanese with English summary. 5 refs.

Ice solid interface, Ice loads, Ice pressure, Ice adhesion, Water level, Offshore structures, Mathematical models

50-5880

Impact ice load acting on flat plate due to wave action.

Hanada, M., Sasajima, T., Kawai, K., Sato, M., Hayakawa, T., Saeki, H., International Symposium on Okhotsk Sea and Sea Ice, 11th, Mombetsu, Hokkaido, Japan, Feb. 25-28, 1996. Abstracts, Mombetsu, Okhotsk Sea and Cold Ocean Research Association, 1996, p.47-52, In Japanese with English summary. 4 refs.

Ice solid interface, Ice loads, Ice pressure, Ice friction, Ice cover strength, Ocean waves, Offshore structures, Impact tests

50-5881

Characteristics of frequency spectra of wind waves in the presence of ice floes.

Hayakawa, T., Sasajima, T., Yoshino, M., Goto, C., International Symposium on Okhotsk Sea and Sea Ice, 11th, Mombetsu, Hokkaido, Japan, Feb. 25-28, 1996. Abstracts, Mombetsu, Okhotsk Sea and Cold Ocean Research Association, 1996, p.53-59, In Japanese with English summary. 4 refs.

Ice water interface, Ice cover effect, Ocean waves, Sea states, Statistical analysis

50-5882

Earthquake response characteristics of offshore structures surrounded by ice floes. (Part 11): Verification of the propriety for analytical model.

Okamoto, N., Adachi, H., Yashima, N., Nakanishi, M., International Symposium on Okhotsk Sea and Sea Ice, 11th, Mombetsu, Hokkaido, Japan, Feb. 25-28, 1996. Abstracts, Mombetsu, Okhotsk Sea and Cold Ocean Research Association, 1996, p.60-65, In Japanese with English summary. 8 refs.

Offshore structures, Ice solid interface, Ice loads, Ice cover effect, Earthquakes, Damping, Mathematical models

50-5883

Countermeasure for ice floes overtopping over breakwater due to wave action.

Sasajima, T., Kawai, K., Nishimaki, H., Hanada, M., Saeki, H., International Symposium on Okhotsk Sea and Sea Ice, 11th, Mombetsu, Hokkaido, Japan, Feb. 25-28, 1996. Abstracts, Mombetsu, Okhotsk Sea and Cold Ocean Research Association, 1996, p.66-70, In Japanese with English summary. 11 refs.

Ports, Ice control, Ice push, Ice pileup, Shore erosion, Ocean waves, Japan—Hokkaido

50-5884

Abrasion of various kinds of stones due to a movement of ice sheet.

Hanada, M., Ooe, F., Tachibana, H., Ujihira, M., Saeki, H., International Symposium on Okhotsk Sea and Sea Ice, 11th, Mombetsu, Hokkaido, Japan, Feb. 25-28, 1996. Abstracts, Mombetsu, Okhotsk Sea and Cold Ocean Research Association, 1996, p.71-75, In Japanese with English summary. 5 refs.

Concrete structures, Construction materials, Masonry, Ice solid interface, Ice loads, Ice friction, Abrasion

50-5885

Hydraulic resistance acting on ice floes.

Kawai, K., Hara, F., Enoki, K., Nagano, A., Kunimatsu, S., Saeki, H., International Symposium on Okhotsk Sea and Sea Ice, 11th, Mombetsu, Hokkaido, Japan, Feb. 25-28, 1996. Abstracts, Mombetsu, Okhotsk Sea and Cold Ocean Research Association, 1996, p.76-82, In Japanese with English summary. 4 refs.

Hydraulic structures, Ice solid interface, Ice loads, Ice water interface, Ice friction, Ice floes, Drift

50-5886

Application of "distributed mass/discrete floe" model for the prediction of pack ice motion in Okhotsk Sea.

Matsuzawa, T., Yamaguchi, H., Rheem, C.K., Suzuki, S., Kato, H., International Symposium on Okhotsk Sea and Sea Ice, 11th, Mombetsu, Hokkaido, Japan, Feb. 25-28, 1996. Abstracts, Mombetsu, Okhotsk Sea and Cold Ocean Research Association, 1996, p.83-87, In Japanese. 5 refs.

Pack ice, Ice floes, Drift, Sea ice distribution, Ice forecasting, Ice models, Computerized simulation, Okhotsk Sea

50-5887

Relation between gouging force and the shape of ice floe.

Terai, Y., Kioka, S., Saeki, H., Otsuka, N., International Symposium on Okhotsk Sea and Sea Ice, 11th, Mombetsu, Hokkaido, Japan, Feb. 25-28, 1996. Abstracts, Mombetsu, Okhotsk Sea and Cold Ocean Research Association, 1996, p.88-92, In Japanese with English summary. 4 refs.

Ice floes, Drift, Ice loads, Ice push, Ice scoring, Ice erosion, Environmental tests, Mathematical models

50-5888

Uniaxial compressive strength of sea ice in Okhotsk Sea.

Masaki, T., Okubo, Y., Honda, H., Otsuka, N., Saeki, H., International Symposium on Okhotsk Sea and Sea Ice, 11th, Mombetsu, Hokkaido, Japan, Feb. 25-28, 1996. Abstracts, Mombetsu, Okhotsk Sea and Cold Ocean Research Association, 1996, p.93-97, In Japanese with English summary. 9 refs.

Ice cover strength, Ice pressure, Ice loads, Ice deformation, Okhotsk Sea

50-5889

Effective utilization of fishery harbor located on Okhotsk Sea coast of Hokkaido.

Okubo, Y., Imai, A., Tachibana, H., Yamashita, T., Saeki, H., International Symposium on Okhotsk Sea and Sea Ice, 11th, Mombetsu, Hokkaido, Japan, Feb. 25-28, 1996. Abstracts, Mombetsu, Okhotsk Sea and Cold Ocean Research Association, 1996, p.98-103, In Japanese with English summary. 4 refs.

Ports, Ice (construction material), Ice roads, Artificial islands, Ice cover strength, Japan—Hokkaido

50-5890

Countermeasures to prevent sea ice from intruding into Saroma Lagoon.

Ishikawa, S., Shimizu, T., Toyama, T., Kumashiro, Y., Shimizu, T., International Symposium on Okhotsk Sea and Sea Ice, 11th, Mombetsu, Hokkaido, Japan, Feb. 25-28, 1996. Abstracts, Mombetsu, Okhotsk Sea and Cold Ocean Research Association, 1996, p.104-108, In Japanese with English summary. 4 refs.

Ports, Ice control, Ice booms, Ice loads, Ice cover strength, Japan—Hokkaido

50-5891

Technological problems of fisheries civil engineering in frozen seas.

Nagano, A., Nakauchi, I., Terashima, T., Haga, Y., Fukuhara, Y., International Symposium on Okhotsk Sea and Sea Ice, 11th, Mombetsu, Hokkaido, Japan, Feb. 25-28, 1996. Abstracts, Mombetsu, Okhotsk Sea and Cold Ocean Research Association, 1996, p.109-113, In Japanese with English summary. 10 refs.

Ports, Ice cover effect, Ice control, Japan—Hokkaido

50-5892

On sea ice off Syowa Station, Antarctica, derived from MOS-1/1b·MESSR mosaics—possibilities of sea ice detection.

Ishida, K., Ohshima, K.I., Yamanouchi, T., International Symposium on Okhotsk Sea and Sea Ice, 11th, Mombetsu, Hokkaido, Japan, Feb. 25-28, 1996. Abstracts, Mombetsu, Okhotsk Sea and Cold Ocean Research Association, 1996, p.122-127, In Japanese with English summary. 4 refs.

Ice surveys, Sea ice distribution, Ice conditions, Ice detection, Radiometry, Spaceborne photography, Image processing, Antarctica—Showa Station

NOAA-AVHRR data have been received since 1980 at Showa Station. Reception of data from the Japanese Marine Observation Satellite (MOS)-1 started in 1989. Unfortunately, reception of NOAA satellite images at Showa had to be discontinued due to ageing of equipment in the middle of 1991. However, reception of data from MOS-1/1b have been continued constantly up to the present time. A purpose of this study is to understand characteristics of sea ice off Showa Station by using these MOS-1/1b-MESSR images. Among the data obtained from Feb. 1989 to Jan. 1993, the authors selected about 2,300 images in which the sea ice condition can be seen. In this study, mosaics of MOS-1-1b-MESSR Quick Look (Q/L) images are used for the analysis. (Auth. mod.)

50-5893

Diffusive coefficients of arctic sea-ice motion estimate through SAR.

Kakuta, S., Sasaki, Y., Mukaida, A., Yamanashi, M., International Symposium on Okhotsk Sea and Sea Ice, 11th, Mombetsu, Hokkaido, Japan, Feb. 25-28, 1996. Abstracts, Mombetsu, Okhotsk Sea and Cold Ocean Research Association, 1996, p.128-131.

Ice surveys, Sea ice distribution, Drift, Synthetic aperture radar, Image processing

50-5894

Distribution of seasonal net production of sea ice on the Arctic Ocean.

Kakuta, S., Muraji, Y., Pavlov, V.K., International Symposium on Okhotsk Sea and Sea Ice, 11th, Mombetsu, Hokkaido, Japan, Feb. 25-28, 1996. Abstracts, Mombetsu, Okhotsk Sea and Cold Ocean Research Association, 1996, p.132-136, 13 refs.

Ice surveys, Sea ice distribution, Ice cover thickness, Ice formation, Ice growth, Ice melting, Ice volume, Drift, Statistical analysis

50-5895

Detection of radar targets in sea-ice clutter by means of fractal dimensions, wavelets and neural network classifiers.

Lin, C.P., Sano, M., Sekine, M., International Symposium on Okhotsk Sea and Sea Ice, 11th, Mombetsu, Hokkaido, Japan, Feb. 25-28, 1996. Abstracts, Mombetsu, Okhotsk Sea and Cold Ocean Research Association, 1996, p.137-142, 16 refs.

Ice surveys, Sea ice distribution, Ice conditions, Ice detection, Sea clutter, Synthetic aperture radar, Image processing

50-5896

Atmosphere and ocean global teleconnection around the Okhotsk Sea.

Sekine, Y., Yamada, F., International Symposium on Okhotsk Sea and Sea Ice, 11th, Mombetsu, Hokkaido, Japan, Feb. 25-28, 1996. Abstracts, Mombetsu, Okhotsk Sea and Cold Ocean Research Association, 1996, p.148-150, 4 refs.

Sea ice distribution, Snow cover distribution, Atmospheric circulation, Global change, Okhotsk Sea

50-5897

Fluctuations of thin ice area in the Sea of Okhotsk.

Enomoto, H., International Symposium on Okhotsk Sea and Sea Ice, 11th, Mombetsu, Hokkaido, Japan, Feb. 25-28, 1996. Abstracts, Mombetsu, Okhotsk Sea and Cold Ocean Research Association, 1996, p.151-155, In Japanese with English summary.

Sea ice distribution, Ice cover thickness, Polynyas, Okhotsk Sea

50-5898

Sea ice situations in the Sea of Okhotsk off the coast of Hokkaido by on board ship observations.

Shimoda, H., Uto, S., Tamura, K., Narita, S., International Symposium on Okhotsk Sea and Sea Ice, 11th, Mombetsu, Hokkaido, Japan, Feb. 25-28, 1996. Abstracts, Mombetsu, Okhotsk Sea and Cold Ocean Research Association, 1996, p.156-160, In Japanese. 5 refs.

Ice surveys, Sea ice distribution, Ice cover thickness, Ice conditions, Japan—Hokkaido, Okhotsk Sea

50-5899

On the oil pollution at ice sea.

Arita, M., et al, International Symposium on Okhotsk Sea and Sea Ice, 11th, Mombetsu, Hokkaido, Japan, Feb. 25-28, 1996. Abstracts, Mombetsu, Okhotsk Sea and Cold Ocean Research Association, 1996, p.161-166, In Japanese. 12 refs.

Oil spills, Oil recovery, Water pollution, Ice water interface, Ice cover effect

50-5900

Typical situations of ice drift in the north-east offshore of Sakhalin.

Kalinin, E.N., Truskov, P.A., Budianskii, N.I., International Symposium on Okhotsk Sea and Sea Ice, 11th, Mombetsu, Hokkaido, Japan, Feb. 25-28, 1996. Abstracts, Mombetsu, Okhotsk Sea and Cold Ocean Research Association, 1996, p.167-170, 1 ref.

Oil spills, Oil recovery, Water pollution, Ice water interface, Ice cover effect, Drift, Russia—Sakhalin Island

50-5901

Problem of choice of the design parameters for ice thickness.

Polomoshnov, A.M., Astaf'ev, V.N., Bogdanchikov, S.M., International Symposium on Okhotsk Sea and Sea Ice, 11th, Mombetsu, Hokkaido, Japan, Feb. 25-28, 1996. Abstracts, Mombetsu, Okhotsk Sea and Cold Ocean Research Association, 1996, p.171-174, 6 refs.

Offshore structures, Ice solid interface, Ice loads, Ice pressure, Ice cover thickness, Design criteria, Statistical analysis

50-5902

Icebreaking patrol vessel *Teshio* 550 G/T type.

Kawashima, Y., Hata, T., International Symposium on Okhotsk Sea and Sea Ice, 11th, Mombetsu, Hokkaido, Japan, Feb. 25-28, 1996. Abstracts, Mombetsu, Okhotsk Sea and Cold Ocean Research Association, 1996, p.177-182, In Japanese.

Icebreakers, Ice navigation, Ships

50-5903

Effect of sea ice in the sea of Okhotsk upon the ocean climate of north Japan in spring through summer.

Yamada, Y., International Symposium on Okhotsk Sea and Sea Ice, 11th, Mombetsu, Hokkaido, Japan, Feb. 25-28, 1996. Abstracts, Mombetsu, Okhotsk Sea and Cold Ocean Research Association, 1996, p.187-192, In Japanese with English summary. 7 refs.

Sea ice distribution, Ice cover effect, Air ice water interaction, Meltwater, Ocean currents, Marine atmospheres, Atmospheric circulation, Okhotsk Sea, Japan

50-5904

Comparisons between the Okhotsk Sea and the Baltic Sea ice.

Shirasawa, K., Leppäranta, M., International Symposium on Okhotsk Sea and Sea Ice, 11th, Mombetsu, Hokkaido, Japan, Feb. 25-28, 1996. Abstracts, Mombetsu, Okhotsk Sea and Cold Ocean Research Association, 1996, p.215-227, 22 refs.

Ice surveys, Sea ice distribution, Ice cover thickness, Ice conditions, Ice edge, Ice salinity, Ice growth, Freezeup, Ice breakup, Okhotsk Sea, Baltic Sea

50-5905

Research of the ice climatology of the Baltic Sea.

Leppäranta, M., Haapala, J., International Symposium on Okhotsk Sea and Sea Ice, 11th, Mombetsu, Hokkaido, Japan, Feb. 25-28, 1996. Abstracts, Mombetsu, Okhotsk Sea and Cold Ocean Research Association, 1996, p.228-233, 18 refs.

Ice surveys, Sea ice distribution, Ice cover thickness, Ice conditions, Statistical analysis, Baltic Sea

50-5906

Radioactive contaminants: potential risk to Arctic Ocean, Bering Sea and North Pacific ocean ecosystems.

Kelley, J.J., Dasher, D., International Symposium on Okhotsk Sea and Sea Ice, 11th, Mombetsu, Hokkaido, Japan, Feb. 25-28, 1996. Abstracts, Mombetsu, Okhotsk Sea and Cold Ocean Research Association, 1996, p.243-249, 17 refs.

Radioactive wastes, Waste disposal, Water pollution, Environmental impact

50-5907

Special role of very small organisms in sustaining the production of large animals in seasonally ice-covered waters.

Legendre, L., International Symposium on Okhotsk Sea and Sea Ice, 11th, Mombetsu, Hokkaido, Japan, Feb. 25-28, 1996. Abstracts, Mombetsu, Okhotsk Sea and Cold Ocean Research Association, 1996, p.254-259, 59 refs.

Marine biology, Microbiology, Cryobiology, Ice cover effect, Biomass, Nutrient cycle, Animals, Ecology, Ecosystems

The question is discussed of how arctic and antarctic seas whose production is dominated by very small organisms most of the year can efficiently sustain large concentrations of apex predators such as baleen whales, toothed whales, seals, fur seals, walruses, polar bears, and seabirds. It is suggested that although metabolism is slower in cold seawater, that is, near the freezing point at -2°C, the dynamic viscosity of seawater increases so that bacterivorous zooplankton filter feeders can influence water movement around themselves for much larger distances relative to their sizes than in warmer water where turbulent forces dominate. It is also suggested that especially in the Antarctic, salps, krill, and copepods provide an efficient transfer from small producers to apex predators.

50-5908

Characteristics of freezing in five lakes within the jurisdiction of Kushiro.

Toukairin, A., International Symposium on Okhotsk Sea and Sea Ice, 11th, Mombetsu, Hokkaido, Japan, Feb. 25-28, 1996. Abstracts, Mombetsu, Okhotsk Sea and Cold Ocean Research Association, 1996, p.291-296.

Frozen lakes, Lake ice, Freezeup, Ice cover thickness, Ice water interface, Japan—Hokkaido

50-5909

Characteristics of the formation of the thermal ice ridges (omiwatari) in Lake Kussharo in 1995.

Toukairin, A., International Symposium on Okhotsk Sea and Sea Ice, 11th, Mombetsu, Hokkaido, Japan, Feb. 25-28, 1996. Abstracts, Mombetsu, Okhotsk Sea and Cold Ocean Research Association, 1996, p.297-302.

Frozen lakes, Lake ice, Freezeup, Ice cover thickness, Ice push, Pressure ridges, Japan—Hokkaido

50-5910

Autonomous underwater vehicle "*Typhlonus*" for under-ice exploration.

Ageev, M.D., International Symposium on Okhotsk Sea and Sea Ice, 11th, Mombetsu, Hokkaido, Japan, Feb. 25-28, 1996. Abstracts, Mombetsu, Okhotsk Sea and Cold Ocean Research Association, 1996, p.345-350, 5 refs.

Submarines, Subglacial navigation, Subglacial observations

50-5911

Sorption and leaching of trace-level metals by polymeric well casings.

Ranney, T.A., Parker, L.V., SR 96-08, *U.S. Army Cold Regions Research and Engineering Laboratory. Special report*, Apr. 1996, 15p., ADA-310 392, 33 refs.

Plastics, Well casings, Ground water, Leaching, Metals

The most commonly used well casing materials (polyvinyl chloride [PVC], polytetrafluoroethylene [PTFE] and stainless steel) cannot be used for all monitoring applications. Therefore, a series of experiments was conducted to compare three alternative polymeric well casing materials (fluorinated ethylene propylene [FEP], fiberglass-reinforced epoxy [FRE] and fiberglass-reinforced plastic [FRP]) with PVC and PTFE. These studies were conducted to determine the overall suitability of these materials for use in groundwater monitoring wells. Previous studies compared these materials for sorption of dilute organic solutes, leaching of organic constituents, and resistance to degradation by chemicals, especially organic solvents. This particular study focuses on sorption and leaching of metals, and shows that the fiberglass materials were more apt to leach metal contaminants than PVC, FEP, and PTFE. Leached concentrations, with one exception (Pb leaching from FRP), were below maximum allowable limits set by the US EPA for drinking water. With respect to sorption, none of the polymers sorbed the anions tested, but all of them sorbed the cations tested. FEP and PTFE were much less sorptive than the other materials. These results and those from previous studies can be used, along with other considerations, to select a casing material that is best suited for the intended monitoring application and conditions in the well.

50-5912

Comparison criteria for environmental chemical analyses of split samples sent to different laboratories: Corps of Engineers archived data.

Grant, C.L., Jenkins, T.F., Mudambi, A.R., SR 96-09, *U.S. Army Cold Regions Research and Engineering Laboratory. Special report,* May 1996, 31p., ADA-310 390, 8 refs.

Ground water, Chemical analysis, Accuracy, Soil analysis, Metals, Explosives

Data comparison criteria were developed for quality control (QC) and quality assurance (QA) chemical analyses obtained during environmental studies directed by the U.S. Army Corps of Engineers (USACE). Archived results for 124 sets of eight metals in soils, 69 sets of fourteen volatile organic compounds (VOCs) in soils, 163 sets of total petroleum hydrocarbons (TPH) in soils, 79 sets of six explosives in soils, and 153 sets of fourteen VOCs in groundwater were analyzed statistically. Concentration ratios (QC_1/QC_2 and QC/QA) were lognormally distributed and this was the model used for comparisons. For both metals in soils and VOCs in groundwater, duplicate QC results should yield ratios between 0.50-2.00; less than 4% of the archived results were outside these limits. For QC/QA ratios, the limits suggested are 0.40-2.50; only 10.2% of metals ratios in soils and 5.6% of the VOCs in groundwater exceeded these limits. Considering that both methods are multi-analyte, the authors find only 4.0% of the metals samples and 2.0% of the VOC samples had more than one offending ratio per sample. Application of these limits to recent analyses produced very similar results. For VOCs, TPH, and explosives in soils, temporary limits of 0.25-4.00 are suggested with the understanding that improvements leading to tightening should be energetically pursued.

50-5913

Dredging Eagle River Flats: remediation study in an active impact area.

Walsh, M.R., MP 3845, UXO (Unexploded Ordnance) Forum 1996, Williamsburg, VA, Mar. 26-28, 1996. Conference proceedings, Alexandria, VA, U.S. Department of Defense Explosives Safety Board, 1996, p.266-274, 15 refs.

Soil pollution, Water pollution, Environmental impact, Explosives, Waste disposal, Land reclamation, Dredging, Military facilities, United States—Alaska—Fort Richardson

Remediation in closed impact areas is hazardous because of the presence of unexploded ordnance (UXOs). Remediation of active impact areas compounds the problems due to the infusion of fresh UXOs. At Eagle River Flats, AK, massive waterfowl die-offs at the Army's impact area triggered an investigation as to the causes of mortality. With the discovery of white phosphorus from smoke rounds as the causal agent, a large, unprecedented multifaceted remedial investigation was initiated. Studies at the Flats can be categorized as either ecological assessments or remedial investigations. Ecological assessments considered the physical and biological dynamics of the Flats and the impact of these factors on the presence of white phosphorus and vice versa. Remedial investigations centered around removal for treatment in a controlled environment, *in-situ* remediation, or burial. Dredging is included in the first category. The objective of the experimental dredging project at Eagle River Flats is the removal of white phosphorus contaminated sediments from the Flats for treatment.

50-5914

Use of layered theory in the design and evaluation of pavement systems.

Hicks, R.G., McHattie, R.L., *Alaska Department of Transportation and Public Facilities. Report,* July 1982, FHWA-AK-RD-83-8, 44p. + appends., 24 refs. In cooperation with U.S. Federal Highway Administration.

Pavements, Road maintenance, Runways, Bearing strength, Impact strength, Dynamic loads, Elastic properties, Design criteria, Computer programs, United States—Alaska

50-5915

Numerical modeling of subglacial sediment deformation: implications for the behavior of the Lake Michigan Lobe, Laurentide Ice Sheet.

Jenson, J.W., MacAyeal, D.R., Clark, P.U., Ho, C.L., Vela, J.C., *Journal of geophysical research,* Apr. 10, 1996, 101(B4), p.8717-8728, 63 refs.

Glaciation, Ice sheets, Glacial geology, Glacier oscillation, Glacier flow, Glacial deposits, Glacier beds, Glacial meteorology, Ice age theory, Paleoclimatology, Global change

50-5916

Radiation and ozone data at Zhongshan Station, Antarctica 1993-1994; radiation data at Great Wall Station, Antarctica 1993-1994.

Bian, L.G., Lu, L.H., Jia, P.Q., Zheng, X.D., Wang, Y., *CHINARE data report,* Dec. 1995, No.9, 270p.

Ozone, Meteorological charts, Albedo, Ultraviolet radiation, Antarctica—Zhongshan Station, Antarctica—Great Wall Station

This volume gives diurnal, annual and hourly mean values of global, reflected, net and ultraviolet radiation from Feb. 11, 1993 to Dec. 31, 1994 at Zhongshan Station, and of global, reflected and net radiation from May 17, 1993 to Dec. 31, 1994 at Great Wall Station. Other computational elements such as the surface albedo and effective radiation on the surface are also given.

50-5917

Quantification of the transport of chemically activated air from the northern hemisphere polar vortex.

Norton, W.A., Chipperfield, M.P., *Journal of geophysical research,* Dec. 20, 1995, 100(D12), p.25,817-25,840, 31 refs.

Climatology, Atmospheric composition, Polar atmospheres, Aerosols, Mass transfer, Polar stratospheric clouds, Atmospheric circulation, Advection, Fluid dynamics, Statistical analysis

50-5918

Simulation of soil moisture and other components of the hydrological cycle using a water budget approach.

Akinremi, O.O., McGinn, S.M., Barr, A.G., *Canadian journal of soil science,* May 1996, 76(2), p.133-142, With French summary. 28 refs.

Soil physics, Soil water, Water content, Plains, Soil air interface, Hydrologic cycle, Evapotranspiration, Moisture transfer, Snowmelt, Snow water equivalent, Runoff forecasting, Mathematical models, Simulation, Seasonal variations

50-5919

Experimental study of the mechanism of skiing turns. 3. Measurement of edging angles of skis on snow surface.

Sahashi, T., Ichino, S., *Japanese journal of applied physics,* Apr. 1996, 35(4A), p.2377-2382, 5 refs.

Skis, Snow mechanics, Performance, Sliding, Orientation, Ice solid interface, Mechanical properties, Physiological effects, Mechanical tests

50-5920

Evaporation rate, free energy, and entropy of amorphous water at 150 K.

Speedy, R.J., Debenedetti, P.G., Smith, R.S., Huang, C., Kay, B.D., *Journal of chemical physics,* July 1, 1996, 105(1), p.240-244, 41 refs.

Ice physics, Amorphous ice, Water temperature, Vapor pressure, Evaporation, Ice water interface, Phase transformations, Molecular energy levels, Thermodynamic properties, Low temperature research

50-5921

Glacier-fed fan at the mouth of Storfjorden trough, western Barents Sea: a comparative study.

Laberg, J.S., Vorren, T.O., *Geologische Rundschau,* June 1996, 85(2), p.338-349, 38 refs.

Pleistocene, Oceanography, Glacial geology, Deltas, Estuaries, Sediment transport, Glacier oscillation, Glacial deposits, Marine deposits, Sedimentation, Seismic surveys, Periodic variations, Barents Sea

50-5922

Effect of superplasticizer dosage on mechanical properties, permeability, and freeze-thaw durability of high-strength concretes with and without silica fume.

Gagné, R., Boisvert, A., Pigeon, M., *ACI materials journal,* Mar.-Apr. 1996, 93(2), p.111-120, 17 refs.

Concrete strength, Concrete durability, Frost resistance, Concrete admixtures, Hydrocarbons, Permeability, Freeze thaw tests, Mechanical tests, Flexural strength, Compressive properties, Porosity

50-5923

Large strain finite-element analysis of snow.

Meschke, G., Liu, C.H., Mang, H.A., *Journal of engineering mechanics,* July 1996, 122(7), p.591-602, 20 refs.

Snow mechanics, Snow plasticity, Tires, Ice solid interface, Traction, Snow compression, Deformation, Strain tests, Viscoelasticity, Rheology, Simulation, Mathematical models

50-5924

Ozone hole and the 1995 Nobel Prize in chemistry. [Trou d'ozone et prix Nobel 1995 de chimie]

Berger, A., *La météorologie,* Mar. 1996, 8(13), p.63-73, In French with English summary. 21 refs.

Ozone, Stratosphere, Atmospheric composition, Ultraviolet radiation, Meteorological data, Antarctica—McMurdo Station

To mark the award of the 1995 Nobel Prize in chemistry to three world renowned atmospheric chemists, this paper recalls the history of scientific progress in stratospheric ozone chemistry. It then summarizes current knowledge of ozone-layer depletion and its impact on climate, vegetation and human health. Sample data from antarctic stations are included. (Auth. mod.)

50-5925

Helicopter services for the United States Antarctic Program and the New Zealand Antarctic Program.

Petroleum Helicopters, Inc., Washington, D.C., National Science Foundation, 1996, 54p. + attachments, Contract No.OPP-9616400.

Helicopters, Research projects, Aircraft, Cargo, Cost analysis, Logistics, Supports

The intent of this contract is to obtain flight services utilizing fully functional aircraft equipped to meet specifications, operated and maintained by qualified personnel, for the National Science Foundation (NSF) in support of the research activities of the United States Antarctic Program (USAP) and the New Zealand Antarctic Program (NZAP). The type of services required to be performed include, but are not limited to, transportation of personnel and cargo in support of the scientific projects, related administrative and infrastructural activities and search and rescue (SAR), as directed by the NSF.

50-5926

Polar regions: a political geography.

Chaturvedi, S., Cambridge, UK, Scott Polar Research Institute, University of Cambridge, 1996, 306p., Refs. p.269-296.

International cooperation, Legislation, Environmental protection, Geography, History, Organizations, Antarctica, Barents Sea, Russia, Northern Sea Route

This book proposes that the "poles apart", *sui generis* theme is outdated and should not be allowed to obscure either the manner in which the polar scene today both reflects and influences international relations in general or the fact that existing polar controversies are merely arctic and antarctic manifestations of the linkages as well as contradictions between economic growth and the imperatives of environmental conservation, sometimes so casually covered under the term "sustainable development". It studies the two polar regions together as "social science laboratories", testing some of the assumptions of the new geopolitics and evaluating its promise and prospects there. (Auth.)

50-5927

Radiocarbon date list VIII: eastern Canadian Arctic, Labrador, northern Quebec, East Greenland shelf, Iceland shelf, and Antarctica.

Manley, W.F., ed, Jennings, A.E., ed, *University of Colorado. Institute of Arctic and Alpine Research. Occasional paper,* 1996, No.50, 163p., Refs. p.119-124.

Marine geology, Marine deposits, Lacustrine deposits, Bottom sediment, Glacial deposits, Quaternary deposits, Drill core analysis, Radioactive age determination, Soil dating, Geochronology, Paleoclimatology, Canada—Northwest Territories—Baffin Island, Greenland, Iceland, Antarctica—Ross Sea

This Date List contains an annotated listing of 420 radiocarbon dates determined on samples from the eastern Canadian Arctic, Labrador, northern Quebec, East Greenland, Iceland, and Antarctica. Nearly two-thirds of the dates are on materials recovered from marine cores. The 22 radiocarbon dates from 10 western Ross Sea cores reported in this date list can be divided into three age groups: 20,000-30,000 BP, 7,000-12,000 BP, and <7000 BP. Dates from 20,000-30,000 ka B.P. only occur in glacial-marine diamictons in cores from the outer continental shelf. These dates have been interpreted to show that the Antarctic Ice Sheet did not ground on the outer shelf during the last glacial maximum. Dates in the second group, at 7,000-12,000 BP occur in cores in and near Drygalski Trough, north of the Drygalski Ice Tongue. These dates constrain deglaciation in the Terra Nova Bay region of the Victoria Land coast; the oldest date in this group is 11,440±90 BP, on decalcified marine sediments in an upper mud unit. The final group, comprising 10 dates of <7000 BP, occurs in seven cores across the western Ross Sea. Several of these dates coincide with diatom abundance spikes thought to represent peaks in diatom productivity during the Holocene. (Auth. mod.)

50-5928

Westwide Avalanche Network. Total snow. Summary by region.

Tremper, B., *Avalanche review,* June 1996, 14(7), p.1,3,4.

Snowstorms, Snowfall, Avalanches, Accidents, United States

50-5929

Relation between winter road maintenance and road safety.

Sävenhed, H., *Sweden. Väg- och transportforskningsinstitut. (Road and Transport Research Institute). VTI rapport,* 1995, No.399A, 41p. + appends., 14 refs. For another version see 49-4031.

Road icing, Road maintenance, Snow removal, Salting, Accidents, Safety, Cold weather operation

50-5930

Permafrost, the active layer, and changing climate.

Lachenbruch, A.H., *U.S. Geological Survey. Open-file report,* 1994, No.94-694, 43p., Refs. p.32-38.

Permafrost heat balance, Permafrost heat transfer, Permafrost distribution, Permafrost depth, Permafrost bases, Active layer, Taliks, Geothermometry, Paleoclimatology, Global warming

50-5931

Modelling the ice-ocean seasonal cycle and time-dependent climate response to atmospheric forcing and runoff in Hudson Bay.

Soucier, F.J., Dionne, J., *Canadian Department of Fisheries and Oceans. Institute of Ocean Sciences, Sidney, British Columbia. Canadian technical report of hydrography and ocean sciences,* 1995, No.169, PERD (Panel for Energy Research and Development) Workshop on Coastal Current Models for Continental Shelves, Kelowna, British Columbia, June 1-2, 1995. Edited by W.R. Crawford and M.G.G. Foreman, p.9-14, 21 refs.

Air ice water interaction, Marine atmospheres, Atmospheric circulation, Ocean currents, Water transport, Sea ice distribution, Ice cover thickness, Ice growth, Ice heat flux, Ice cover effect, Drift, Computerized simulation, Canada—Hudson Bay

50-5932

Oil spills in open and ice-infested waters: a comparative need for data on water currents.

Venkatesh, S., *Canadian Department of Fisheries and Oceans. Institute of Ocean Sciences, Sidney, British Columbia. Canadian technical report of hydrography and ocean sciences,* 1995, No.169, PERD (Panel for Energy Research and Development) Workshop on Coastal Current Models for Continental Shelves, Kelowna, British Columbia, June 1-2, 1995. Edited by W.R. Crawford and M.G.G. Foreman, p.26-31, 8 refs.

Oil spills, Water pollution, Ocean currents, Ice water interface, Ice cover effect, Drift

50-5933

Tidally forced under-ice Ekman layers observed by an acoustic Doppler current profiler.

Marsden, R.F., Ingram, R.G., Milinazzo, F., Buckley, A.G., *Canadian Department of Fisheries and Oceans. Institute of Ocean Sciences, Sidney, British Columbia. Canadian technical report of hydrography and ocean sciences,* 1995, No.169, PERD (Panel for Energy Research and Development) Workshop on Coastal Current Models for Continental Shelves, Kelowna, British Columbia, June 1-2, 1995. Edited by W.R. Crawford and M.G.G. Foreman, p.32-37, 11 refs.

Ice water interface, Ice cover effect, Ice acoustics, Subglacial observations, Underwater acoustics, Tidal currents, Turbulent exchange, Nutrient cycle, Mathematical models

50-5934

Vertical structure of the currents on the Newfoundland shelf.

Narayanan, S., Colbourne, E., Helbig, J., *Canadian Department of Fisheries and Oceans. Institute of Ocean Sciences, Sidney, British Columbia. Canadian technical report of hydrography and ocean sciences,* 1995, No.169, PERD (Panel for Energy Research and Development) Workshop on Coastal Current Models for Continental Shelves, Kelowna, British Columbia, June 1-2, 1995. Edited by W.R. Crawford and M.G.G. Foreman, p.38-45, 3 refs.

Oceanographic surveys, Ocean currents, Drift, Ice forecasting, Canada—Newfoundland

50-5935

Proton-ordered ice structures at zero pressure. A quantum-mechanical investigation.

Pisani, C., Casassa, S., Ugliengo, P., *Chemical physics letters,* May 3, 1996, 253(3-4), p.201-208, 25 refs.

Ice physics, Ice microstructure, Molecular structure, Phase transformations, Protons, Doped ice, Impurities, Ice models, Molecular energy levels, Mathematical models, Stability

50-5936

Centrifuge modeling and numerical simulation of ice scour.

Yang, Q.S., Poorooshasb, H.B., Lach, P.R., *Soils and foundations,* Mar. 1996, 36(1), p.85-96, 11 refs.

Oceanography, Sea ice, Ice scoring, Simulation, Mathematical models, Ocean bottom, Ice solid interface, Soil mechanics, Shear strength, Stress concentration, Deformation, Mechanical tests, Ice models, Underground pipelines

50-5937

Adsorption and desorption of water on single crystal MgO(100): the role of surface defects.

Stirniman, M.J., Huang, C., Smith, R.S., Joyce, S.A., Kay, B.D., *Journal of chemical physics,* July 15, 1996, 105(3), p.1295-1298, 26 refs.

Ice physics, Water structure, Molecular structure, Low temperature tests, Adsorption, Ice formation, Ice solid interface, Defects, Thermodynamic properties

50-5938

Erratum: phase transition of the hydrogen bonded crystals and ice (J. Chem. Phys. 103, 6662, 1995).

Fujii, K., *Journal of chemical physics,* July 15, 1996, 105(3), p.1301, For pertinent paper see 50-1112.

Ice physics, Hydrogen bonds, Phase transformations, Molecular energy levels, Thermodynamic properties

50-5939

Electric field effects on force curves for oxidized silicon tips and ice surfaces in a controlled environment.

Slaughterbeck, C.R., et al, *Journal of vacuum science & technology A,* May-June 1996, 14(3)pt.I, National Symposium of the American Vacuum Society, 42nd, Minneapolis, MN, Oct. 16-20, 1995, p.1213-1218, 30 refs.

Ice physics, Ice electrical properties, Scanning electron microscopy, Surface properties, Electric fields, Water films, Ice water interface, Ice vapor interface, Ice growth, Self diffusion, Ion exchange, Laboratory techniques

50-5940

Adsorption and ionization of HCl on an ice surface.

Banham, S.F., Sodeau, J.R., Horn, A.B., McCoustra, M.R.S., Chesters, M.A., *Journal of vacuum science & technology A,* May-June 1996, 14(3)pt.II, National Symposium of the American Vacuum Society, 42nd, Minneapolis, MN, Oct. 16-20, 1995, p.1620-1626, 41 refs.

Ice physics, Polar stratospheric clouds, Cloud physics, Simulation, Ice spectroscopy, Infrared spectroscopy, Hydrates, Aerosols, Ice vapor interface, Adsorption, Ionization, High pressure tests

50-5941

Was it snowing snowballs?

Bartlett, A.A., *Physics teacher,* Feb. 1996, 34(2), p.84.

Snowfall, Snow cover structure, Snow accumulation, Topographic features, Insulation, Weather observations, Education

50-5942

Experimental investigations and computational fracture mechanics modelling of brittle ice fragmentation.

Tuhkuri, J., *Acta polytechnica Scandinavica. Mechanical engineering series,* 1996, No.120, 105p., Refs. p.93-98.

Sea ice, Ice mechanics, Mechanical tests, Ice solid interface, Ice breaking, Brittleness, Tensile properties, Cracking (fracturing), Dynamic loads, Offshore structures, Design criteria, Boundary value problems, Mathematical models

50-5943

Freeze concentration by layer crystallization.

Flesland, O., *Drying technology,* 1995, 13(8-9), p.1713-1739, 10 refs.

Solutions, Frozen liquids, Mass transfer, Freeze drying, Ice physics, Freezing front, Water films, Laminar flow, Ice formation, Ice sublimation, Heat transfer, Layers, Ice water interface, Thermodynamic properties

50-5944

Palmer LTER: a long-term ecological research program at Palmer Station, Antarctica.

Smith, R.C., et al, *Oceanography,* 1995, 8(3), p.77-86, 48 refs.

Ecology, Marine biology, Sea ice, Algae, Ocean currents, Research projects, Antarctica—Antarctic Peninsula, Antarctica—Palmer Station

The conceptual diagram of the ecosystem and the annual time-lines of key physical and biological components provide an initial construct for defining air-ocean-ice-ecosystem and trophic-level linkages. The interannual variability in sea ice coverage allows us to "conduct" natural experiments on the impact sea ice has on various trophic levels by monitoring parameters and processes during and after seasons/years of different sea ice coverage. Prior to the Palmer LTER, there were few systematic long-term, large-scale studies in Antarctica that would allow one to distinguish secular trends from cycles and to evaluate interannual variability inherent in the system. Palmer LTER research encompasses short and long time scales as

well as fine and regional spatial scales and thus is poised to resolve ecosystem dynamics and linkages in addition to providing a historical long-term database for future ecosystem studies in this region.

50-5945

Western Conference, Anchorage, AK, Feb. 19-21, 1996. Proceedings. Controlling corrosion in the northern latitudes.

National Association of Corrosion Engineers (NACE) International, Houston, TX. Canadian Region, Anchorage, AK, 1996, 880p., Refs. passim. For selected papers see 50-3760 and 50-5946 through 50-5957.

Corrosion, Concrete structures, Steel structures, Pipelines, Weatherproofing, Cold weather performance, Low temperature tests

50-5946

High performance single component urethane technology eliminates application restrictions for temperature, humidity and dew point.

Brinton, W.J., NACE Canadian Region Western Conference, Anchorage, AK, Feb. 19-21, 1996. Proceedings. Controlling corrosion in the northern latitudes, Anchorage, AK, National Association of Corrosion Engineers (NACE) Canadian Region (Affiliate of NACE International, Houston, TX), 1996, p.327-336, 2 refs.

Bridges, Protective coatings, Weatherproofing, Cold weather performance

50-5947

Migrating corrosion inhibitors for reinforced concrete.

Miksic, B., Gelner, L., Bjegovic, D., Sipos, L., NACE Canadian Region Western Conference, Anchorage, AK, Feb. 19-21, 1996. Proceedings. Controlling corrosion in the northern latitudes, Anchorage, AK, National Association of Corrosion Engineers (NACE) Canadian Region (Affiliate of NACE International, Houston, TX), 1996, p.343-362, 22 refs.

Reinforced concretes, Concrete admixtures, Concrete durability, Air entrainment, Freeze thaw tests, Salting, Corrosion, Weatherproofing, Surfactants

50-5948

Maintenance and servicing of northern facilities—local content.

Prinsloo, H.F., NACE Canadian Region Western Conference, Anchorage, AK, Feb. 19-21, 1996. Proceedings. Controlling corrosion in the northern latitudes, Anchorage, AK, National Association of Corrosion Engineers (NACE) Canadian Region (Affiliate of NACE International, Houston, TX), 1996, p.375-386, Footnotes passim. Nunavut, meaning "our land" in Inuit, is a new territory to be established on Apr. 1, 1999 in what is now the eastern part of the Northwest Territories.

Oil storage, Storage tanks, Protective coatings, Cold weather operation, Labor factors, Economic development, Regional planning, Canada—Northwest Territories

50-5949

Logistics in arctic corrosion control.

Dart, T.R., NACE Canadian Region Western Conference, Anchorage, AK, Feb. 19-21, 1996. Proceedings. Controlling corrosion in the northern latitudes, Anchorage, AK, National Association of Corrosion Engineers (NACE) Canadian Region (Affiliate of NACE International, Houston, TX), 1996, p.425-432, 1 footnote.

Pipelines, Corrosion, Cold weather operation, Logistics, United States—Alaska

50-5950

Durable concrete for northern environments.

Gerwick, B.C., Jr., NACE Canadian Region Western Conference, Anchorage, AK, Feb. 19-21, 1996. Proceedings. Controlling corrosion in the northern latitudes, Anchorage, AK, National Association of Corrosion Engineers (NACE) Canadian Region (Affiliate of NACE International, Houston, TX), 1996, p.433-445.

Concrete durability, Concrete freezing, Frost action, Frost protection, Corrosion, Cold weather performance

50-5951

Freezing point depression by common salts: implications for corrosion in cold climates.

Brass, G.W., NACE Canadian Region Western Conference, Anchorage, AK, Feb. 19-21, 1996. Proceedings. Controlling corrosion in the northern latitudes, Anchorage, AK, National Association of Corrosion Engineers (NACE) Canadian Region (Affiliate of NACE International, Houston, TX), 1996, p.447-453, 4 refs.

Brines, Salt water, Water chemistry, Freezing points, Impurities, Ice formation, Ice composition, Ice salinity, Corrosion

50-5952

Effects of northern shipping and storage on corrosion performance.

Perrigo, L.D., III, Perrigo, D.T., NACE Canadian Region Western Conference, Anchorage, AK, Feb. 19-21, 1996. Proceedings. Controlling corrosion in the northern latitudes, Anchorage, AK, National Association of Corrosion Engineers (NACE) Canadian Region (Affiliate of NACE International, Houston, TX), 1996, p.455-468, 23 refs.

Marine transportation, Logistics, Route surveys, Cargo, Storage, Weatherproofing, Sea water, Sea spray, Corrosion

50-5953

Corrosion in Anchorage homes and buildings.

Hicks, R.J., NACE Canadian Region Western Conference, Anchorage, AK, Feb. 19-21, 1996. Proceedings. Controlling corrosion in the northern latitudes, Anchorage, AK, National Association of Corrosion Engineers (NACE) Canadian Region (Affiliate of NACE International, Houston, TX), 1996, p.469-476, 4 refs.

Buildings, Water pipes, Corrosion, Weatherproofing, Cold weather construction, United States—Alaska—Anchorage

50-5954

Thermodynamic considerations relevant to corrosion of pipeline steels in permafrost.

White, W.E., King, R.J., NACE Canadian Region Western Conference, Anchorage, AK, Feb. 19-21, 1996. Proceedings. Controlling corrosion in the northern latitudes, Anchorage, AK, National Association of Corrosion Engineers (NACE) Canadian Region (Affiliate of NACE International, Houston, TX), 1996, p.477-524, 36 refs.

Underground pipelines, Permafrost beneath structures, Frozen ground thermodynamics, Frozen ground chemistry, Steels, Brines, Corrosion

50-5955

Influence of chemical compositional components of aluminum anodes when used in cold saline environments.

Schrieber, C.F., NACE Canadian Region Western Conference, Anchorage, AK, Feb. 19-21, 1996. Proceedings. Controlling corrosion in the northern latitudes, Anchorage, AK, National Association of Corrosion Engineers (NACE) Canadian Region (Affiliate of NACE International, Houston, TX), 1996, p.615-627, 11 refs.

Sea water, Bottom sediment, Mud, Metals, Corrosion, Low temperature tests

50-5956

Prediction of low carbon steel hardness, impact and tensile properties affected by elevated post weld heat treatment temperatures and additional heat cycles.

Haney, F., Rynn, M., NACE Canadian Region Western Conference, Anchorage, AK, Feb. 19-21, 1996. Proceedings. Controlling corrosion in the northern latitudes, Anchorage, AK, National Association of Corrosion Engineers (NACE) Canadian Region (Affiliate of NACE International, Houston, TX), 1996, p.699-720, 9 refs.

Steels, Steel structures, Tanks (containers), Storage tanks, Welding, Tensile properties, Impact tests, Hardness tests, Low temperature tests

50-5957

Manufacture and installation of duplex stainless steel line pipe for arctic application.

Noble, D.N., NACE Canadian Region Western Conference, Anchorage, AK, Feb. 19-21, 1996. Proceedings. Controlling corrosion in the northern latitudes, Anchorage, AK, National Association of Corrosion Engineers (NACE) Canadian Region (Affiliate of NACE International, Houston, TX), 1996, p.763-776, 1 ref.

Pipelines, Steels, Welding, Impact tests, Hardness tests, Low temperature tests, Cold weather performance, United States—Alaska—North Slope

50-5958

Dislocations and grain boundaries in polycrystalline ice: a preliminary study by synchrotron X-ray topography.

Liu, F.P., Baker, I., Yao, G., Dudley, M., *Journal of materials science,* 1992, Vol.27, p.2719-2725, 14 refs.

Ice physics, Ice crystal structure, Defects, Orientation, Ice microstructure, X ray analysis, Imaging, Wave propagation, Topographic features

50-5959

Ionisation and solvation of stratospherically relevant molecules on ice films.

Banham, S.F., Horn, A.B., Koch, T.G., Sodeau, J.R., *Chemical Society, London. Faraday discussions,* 1995, Vol.100, p.321-332, 26 refs.

Climatology, Polar stratospheric clouds, Cloud physics, Ice vapor interface, Adsorption, Heterogeneous nucleation, Aerosols, Ice sublimation, Ionization, Ice spectroscopy, Simulation

Heterogeneous reactions of stratospheric reservoir species such as HCl, N_2O_5 and $ClONO_2$ on type I (nitric acid hydrates) and type II (water-ice) polar stratospheric cloud (PSC) particles are believed to play an important role in the large losses of stratospheric ozone observed during the antarctic spring. Laboratory studies of such processes, using thin ice films as PSC particle surface mimics, can provide mechanistic information about individual elementary steps and overall reaction schemes. IR and mass spectrometry have been used to identify reaction products and intermediates and it has been shown that the primary step in all the studied reaction schemes involves the formation of ionic surface species. Furthermore, the nature and stability of the ions are found to be inextricably linked with the amount of 'free' water available to solvate them. The following questions are also addressed: are adsorbed ions (e.g. nitrate, chloride and oxonium) reactive on ice surfaces? If so, are the products formed the same as those suggested when their corresponding molecular parents are involved? (Auth. mod.)

50-5960

Sample representativeness: The missing element in explosives site characterization.

Jenkins, T.F., Grant, C.L., Brar, G.S., Thorne, P.G., Schumacher, P.W., Ranney, T.A., MP 3846, Environmental Symposium & Exhibition, 22nd, Orlando, FL, Mar. 18-21, 1996. Proceedings, American Defense Preparedness Association, 1996, p.517-522, 4 refs.

Soil pollution, Soil tests, Chemical analysis, Sampling, Explosives, Sediments, Stability, Laboratory techniques, Accuracy, Statistical analysis

This study was conducted to assess the degree of short-range heterogeneity in analyte concentrations present at explosives-contaminated sites. Such information is essential if sampling methods are to be established that provide representative samples for analysis and from which informed decisions can be made. Soil sampling was conducted at nine sampling locations on three installations. Seven discrete grab samples were collected in a wheel pattern of radius 61 cm (one sample from the center and six around the perimeter). Each of the seven samples was homogenized in the field and duplicates were analyzed by an on-site colorimetric method as well as being sent for off-site analysis using EPA Method 8330. Results indicate that TNT concentrations varied substantially at all sampling locations; concentrations varied as much as $2\frac{1}{2}$ orders of magnitude within a sampling wheel. Partitioning of overall variances indicated that sampling error dominated over analytical error. Therefore, the probability of collecting discrete samples that represent average analyte concentrations is very unlikely with these levels of heterogeneity. A combination of composite sampling, on-site homogenization, and on-site colorimetric analysis provided an inexpensive and rapid site-characterization procedure that was accurate and precise, and provided results that were representative of site conditions.

50-5961

New approach to evaluating pre-analysis holding times for the determination of volatile organic compounds in soil.

Hewitt, A.D., MP 3847, Volatile compounds in the environment. Edited by W. Wang et al, American Society for Testing and Materials, 1996, p.181-191, ASTM STP 1261, 14 refs.

Waste disposal, Soil pollution, Hydrocarbons, Soil tests, Vapor diffusion, Sampling, Stability, Degradation, Storage, Laboratory techniques, Sealing

In the absence of volatilization losses, the short-term concentration stabilities of benzene, toluene, trans-1,2-dichloroethylene, and trichloroethylene were assessed in soil subsamples. Previous holding time studies for this matrix failed to eliminate volatilization as a variable, making them difficult to interpret. Here, vapor-fortified soil subsamples held in sealed glass ampoules for 14 days at 22°C experienced appreciable reductions in benzene and toluene concentrations, presumably attributable to biodegradation. When the same fortified soil was held as a subsample for either headspace or purge-and-trap analyses, it showed an appreciable reduction in toluene and a complete loss of benzene over a 14-day holding period at 4°C. In contrast, fortified soils held in sealed glass ampoules at 4°C, or dispersed in methanol and held at 22°C, showed no significant analyte losses over periods of 20 and 98 days, respectively.

50-5962

Effect of collection and handling practices on concentrations of volatile organic compounds detected in soil subsamples.

Hewitt, A.D., MP 3848, Volatile compounds in the environment. Edited by W. Wang et al, American Society for Testing and Materials, 1996, p.170-180, ASTM STP 1261, 14 refs.

Waste disposal, Soil tests, Sampling, Soil pollution, Hydrocarbons, Wells, Boreholes, Laboratory techniques, Degradation, Accuracy, Environmental tests

The losses of trichloroethylene from soil samples transferred to and from a storage bottle were evaluated by comparing values obtained using standard techniques with values obtained using a method that limits sample disruption, exposure, and volatilization losses from a subsample after a single transfer step. Results strongly suggest that volatile organic compounds (VOCs) are easily lost from contaminated soils if care is not taken to limit surface area exposure and ensure subsample isolation. For this site investigation and others using similar sample-handling protocols, VOC losses are most abundant during field collection and storage.

50-5963

Adsorption of CH_4 on laboratory-made crushed ice and on natural snow at 77 K. Atmospheric implications.

Chaix, L., Ocampo, J., Dominé, F., *Académie des sciences, Paris. Comptes rendus. Série II*, 1996, Vol.322, p.609-622, With French summary. 26 refs.

Ice physics, Climatology, Cloud physics, Snow crystal growth, Adsorption, Ice vapor interface, Natural gas, Ice crystal structure, Defects, Hydrogen bonds, Atmospheric composition, Simulation

50-5964

Nitric acid, particulate nitrate and ammonium in the continental free troposphere: nitrogen deposition to an alpine tundra ecosystem.

Sievering, H., Rusch, D., Marquez, L., *Atmospheric environment*, July 1996, 30(14), p.2527-2537, 41 refs.

Climatology, Atmospheric boundary layer, Air pollution, Tundra climate, Alpine tundra, Tundra vegetation, Nutrient cycle, Ecosystems, Aerosols, Sedimentation, Soil air interface, Sampling, Environmental impact

50-5965

Calculation of temperature effects on wetting coefficients of porous solids and their capillary pressure functions.

Grant, S.A., Salehzadeh, A., MP 3849, *Water resources research*, Feb. 1996, 32(2), p.261-270, 30 refs.

Soil physics, Porosity, Capillarity, Soil water migration, Saturation, Vapor pressure, Temperature effects, Temperature variations, Thermodynamic properties, Interfacial tension, Mathematical models, Enthalpy

The authors explore the notion that changes in wetting coefficients of porous solids contribute to the temperature sensitivities of capillary pressure functions (CPFs). A chemical-thermodynamic explanation for these contributions was developed. If the temperature sensitivities of CPFs were due to capillarity (i.e., due to temperature-induced changes in liquid-gas interfacial tensions or wetting coefficients), then for a given degree of saturation the ratios of capillary pressures to their temperature derivatives should have been linear functions of thermodynamic temperature, with slopes equal to 1. This indeed was the case for samples of both synthetic and natural porous media. Further, the estimated intercepts of these linear functions indicated that changes with temperature of these porous materials' wetting coefficients had pronounced effects on temperature sensitivities of their CPFs. A simple model for temperature effects on CPFs, which was derived from the linear relationship between temperature and the ratio of capillary pressure to its temperature derivative, could be fitted precisely by nonlinear regression to CPFs of two soils determined at four temperatures.

50-5968

Correction to "Calculation of temperature effects on wetting coefficients of porous solids and their capillary pressure functions" by Steven A. Grant and Amir Salehzadeh. MP 3887, *Water resources research*, May 1996, 32(5), p.1477, 1 ref. For pertinent paper see 50-5965.

Soil physics, Capillarity, Temperature effects, Mathematical models

50-5969

Albedo of dirty snow during conditions of melt.

Conway, H., Gades, A., Raymond, C.F., *Water resources research*, June 1996, 32(6), p.1713-1718, 17 refs.

Snow hydrology, Snowmelt, Snow optics, Brightness, Albedo, Aerosols, Volcanic ash, Sedimentation, Seepage, Subsurface drainage, Periodic variations

50-5970

Dynamics of heat exchange between sediment and water in a lake.

Fang, X., Stefan, H.G., *Water resources research*, June 1996, 32(6), p.1719-1727, 20 refs.

Lakes, Heat flux, Water temperature, Bottom sediment, Air ice water interaction, Ice cover effect, Snow cover effect, Snow depth, Temperature variations, Seasonal variations, Mathematical models

50-5971

Low-temperature amorphous phase in a fragile glass-forming substance.

Cohen, I., et al, *Journal of physical chemistry*, May 16, 1996, 100(20), p.8518-8526, 45 refs.

Frozen liquids, Supercooling, Low temperature research, Phase transformations, Viscosity, Freezing, Liquid phases, Temperature effects, Spectroscopy, X ray analysis

50-5972

AMC-FAST quarterly report—January-March 1994.

Department of the Army. Army Materiel Command. Field Assistance in Science and Technology Activity, Ft. Belvoir, Mar. 1994, 114p.

Military equipment, Military operation, Military research, Cold weather operation, Cold weather performance, Cold weather survival

50-5973

Airborne Arctic Stratospheric Expedition: prologue.

Turco, R.P., Plumb, A., Condon, E., *Geophysical research letters*, Mar. 1990, 17(4)suppl., p.313-316, 8 refs.

Climatology, Polar atmospheres, Aerial surveys, Atmospheric composition, Cloud physics, Sampling, Stratosphere, Ozone, Climatic changes, Degradation, Research projects, Environmental impact

50-5974

Total ozone during the 88-89 northern hemisphere winter.

Newman, P.A., Stolarski, R., Schoeberl, M.R., Lait, L.R., Krueger, A., *Geophysical research letters*, Mar. 1990, 17(4)suppl., p.317-320, 12 refs.

Climatology, Polar atmospheres, Climatic changes, Atmospheric composition, Ozone, Stratosphere, Degradation, Sampling, Spectroscopy, Seasonal variations

50-5975

Stratospheric ozone layer above Spitsbergen in winter 1989.

Neuber, R., Krüger, B.C., *Geophysical research letters*, Mar. 1990, 17(4)suppl., p.321-324, 9 refs.

Climatology, Polar atmospheres, Atmospheric composition, Stratosphere, Stratification, Ozone, Sampling, Sounding, Profiles, Seasonal variations, Norway—Spitsbergen

50-5976

Airborne lidar observations in the wintertime arctic stratosphere: ozone.

Browell, E.V., et al, *Geophysical research letters*, Mar. 1990, 17(4)suppl., p.325-328, 6 refs.

Climatology, Aerial surveys, Polar atmospheres, Stratosphere, Atmospheric composition, Ozone, Turbulent diffusion, Distribution, Degradation, Lidar

50-5977

Stratospheric temperatures during the 88-89 northern hemisphere winter.

Newman, P.A., Lait, L.R., Schoeberl, M.R., Nagatani, R.M., *Geophysical research letters*, Mar. 1990, 17(4)suppl., p.329-332, 15 refs.

Climatology, Polar atmospheres, Stratosphere, Air temperature, Polar stratospheric clouds, Cloud physics, Temperature measurement, Temperature variations, Seasonal variations

50-5978

Comparison of arctic lower stratospheric winter temperatures for 1988-89 with temperatures since 1964.

Nagatani, R.M., Miller, A.J., Gelman, M.E., Newman, P.A., *Geophysical research letters*, Mar. 1990, 17(4)suppl., p.333-336, 8 refs.

Climatology, Polar atmospheres, Stratosphere, Air temperature, Sounding, Temperature variations, Statistical analysis, Polar stratospheric clouds

50-5979

Stratospheric temperatures during AASE: results from STRATAN.

Rood, R.B., Newman, P.A., Lait, L.R., Lamich, D.J., Chan, K.R., *Geophysical research letters*, Mar. 1990, 17(4)suppl., p.337-340, 8 refs.

Climatology, Polar atmospheres, Air temperature, Stratosphere, Sounding, Models, Correlation, Accuracy, Weather forecasting, Polar stratospheric clouds

50-5980

Temperature and wind measurements and model atmospheres of the 1989 Airborne Arctic Stratospheric Expedition.

Chan, K.R., Bowen, S.W., Bui, T.P., Scott, S.G., Dean-Day, J., *Geophysical research letters*, Mar. 1990, 17(4)suppl., p.341-344, 5 refs.

Climatology, Polar atmospheres, Stratosphere, Air temperature, Wind velocity, Aerial surveys, Temperature gradients, Profiles, Models

50-5981

Radiative heating rates during the Airborne Arctic Stratospheric Expedition.

Rosenfield, J.E., Schoeberl, M.R., Lait, L.R., Newman, P.A., Proffitt, M.H., Kelly, K.K., *Geophysical research letters*, Mar. 1990, 17(4)suppl., p.345-348, 12 refs.

Climatology, Polar atmospheres, Stratosphere, Heat balance, Air temperature, Radiant heating, Cooling rate, Ozone, Cloud cover, Profiles

50-5982

Small-scale waves encountered during AASE.

Bacmeister, J.T., Schoeberl, M.R., Lait, L.R., Newman, P.A., Gary, B., *Geophysical research letters*, Mar. 1990, 17(4)suppl., p.349-352, 3 refs.

Climatology, Polar atmospheres, Stratosphere, Air temperature, Gravity waves, Wave propagation, Wind velocity, Topographic effects, Profiles, Sounding, Statistical analysis

50-5983

Measurements of condensation nuclei in the Airborne Arctic Stratospheric Expedition: observations of particle production in the polar vortex.

Wilson, J.C., Stolzenburg, M.R., Clark, W.E., Loewenstein, M., Ferry, G.V., Chan, K.R., *Geophysical research letters,* Mar. 1990, 17(4)suppl., p.361-364, 12 refs.

Climatology, Polar atmospheres, Stratosphere, Polar stratospheric clouds, Cloud physics, Sedimentation, Condensation nuclei, Aerosols, Distribution, Aerial surveys, Sampling, Turbulent diffusion

50-5984

Observations of polar stratospheric clouds in the arctic winter 1989 at 79°N.

Krüger, B.C., *Geophysical research letters,* Mar. 1990, 17(4)suppl., p.365-368, 17 refs.

Climatology, Polar atmospheres, Stratosphere, Atmospheric composition, Ozone, Polar stratospheric clouds, Detection, Lidar, Backscattering, Sounding, Norway—Svalbard

50-5985

Stratospheric cloud micrc-layers and small-scale temperature variations in the Arctic in 1989.

Hofmann, D.J., *Geophysical research letters,* Mar. 1990, 17(4)suppl., p.369-372, 14 refs.

Climatology, Polar atmospheres, Cloud physics, Polar stratospheric clouds, Temperature variations, Aerosols, Particle size distribution, Condensation nuclei, Layers, Sounding, Profiles

50-5986

Radiative effects of polar stratospheric clouds.

Kinne, S., Toon, O.B., *Geophysical research letters,* Mar. 1990, 17(4)suppl., p.373-376, 18 refs.

Climatology, Polar stratospheric clouds, Cloud physics, Aerosols, Heat balance, Radiant heating, Cooling rate, Air temperature, Upwelling, Profiles, Ice crystals, Sounding

50-5987

Optical backscatter characteristics of arctic polar stratospheric clouds.

Kent, G.S., Poole, L.R., McCormick, M.P., Schaffner, S.K., Hunt, W.H., Osborn, M.T., *Geophysical research letters,* Mar. 1990, 17(4)suppl., p.377-380, 14 refs.

Climatology, Polar atmospheres, Polar stratospheric clouds, Cloud physics, Sounding, Lidar, Optical properties, Aerosols, Backscattering, Correlation, Polarization (waves)

50-5988

Arctic polar stratospheric cloud observations by airborne lidar.

McCormick, M.P., Kent, G.S., Hunt, W.H., Osborn, M.T., Poole, L.R., Pitts, M.C., *Geophysical research letters,* Mar. 1990, 17(4)suppl., p.381-383, 7 refs.

Climatology, Polar atmospheres, Atmospheric composition, Polar stratospheric clouds, Aerial surveys, Lidar, Ice optics, Aerosols, Backscattering, Polarization (waves), Sounding, Classifications

50-5989

Airborne lidar observations in the wintertime arctic stratosphere: polar stratospheric clouds.

Browell, E.V., et al, *Geophysical research letters,* Mar. 1990, 17(4)suppl., p.385-388, 10 refs.

Climatology, Polar atmospheres, Polar stratospheric clouds, Aerial surveys, Lidar, Backscattering, Ice optics, Classifications, Polarization (waves), Optical properties, Sounding

50-5990

Dual-polarization airborne lidar observations of polar stratospheric cloud evolution.

Poole, L.R., et al, *Geophysical research letters,* Mar. 1990, 17(4)suppl., p.389-392, 15 refs.

Climatology, Polar atmospheres, Polar stratospheric clouds, Cloud physics, Aerial surveys, Lidar, Polarization (waves), Backscattering, Aerosols, Ice crystal optics, Classifications

50-5991

Analysis of lidar observations of polar stratospheric clouds.

Toon, O.B., Browell, E.V., Kinne, S., Jordan, J., *Geophysical research letters,* Mar. 1990, 17(4)suppl., p.393-396, 16 refs.

Climatology, Polar atmospheres, Polar stratospheric clouds, Optical properties, Ice crystal optics, Aerosols, Condensation nuclei, Aerial surveys, Lidar, Backscattering, Polarization (waves)

50-5992

SAM II aerosol measurements during the 1989 AASE.

Osborn, M.T., Pitts, M.C., Powell, K.A., McCormick, M.P., *Geophysical research letters,* Mar. 1990, 17(4)suppl., p.397-400, 8 refs.

Climatology, Polar atmospheres, Atmospheric composition, Atmospheric density, Polar stratospheric clouds, Detection, Aerosols, Profiles, Photometry, Radiance, Attenuation

50-5993

SAM II and lidar aerosol profile comparisons during AASE.

Osborn, M.T., Poole, L.R., Wang, P.H., *Geophysical research letters,* Mar. 1990, 17(4)suppl., p.401-404, 13 refs.

Climatology, Polar atmospheres, Cloud physics, Atmospheric density, Attenuation, Aerial surveys, Lidar, Photometry, Aerosols, Polar stratospheric clouds, Particle size distribution, Correlation

50-5994

SAGE II observations of polar stratospheric clouds near 50°N January 31-February 2, 1989.

Pitts, M.C., Poole, L.R., McCormick, M.P., *Geophysical research letters,* Mar. 1990, 17(4)suppl., p.405-408, 11 refs.

Climatology, Polar stratospheric clouds, Detection, Atmospheric density, Attenuation, Aerosols, Cloud physics, Photometry, Heterogeneous nucleation

50-5995

Survey of particle measurements in the Arctic from the forward scattering spectrometer probe model 300.

Dye, J.E., Gandrud, B.W., Baumgardner, D., Sanford, L., Ferry, G.V., *Geophysical research letters,* Mar. 1990, 17(4)suppl., p.409-412, 9 refs.

Climatology, Polar atmospheres, Cloud physics, Polar stratospheric clouds, Aerosols, Atmospheric composition, Aerosols, Particle size distribution, Aerial surveys, Spectroscopy, Probes, Performance

50-5996

Observed particle evolution in the polar stratospheric cloud of January 24, 1989.

Dye, J.E., et al, *Geophysical research letters,* Mar. 1990, 17(4)suppl., p.413-416, 17 refs.

Climatology, Polar atmospheres, Polar stratospheric clouds, Cloud physics, Aerosols, Particle size distribution, Classifications, Probes, Aerial surveys, Spectroscopy, Heterogeneous nucleation

50-5997

Nitric acid in polar stratospheric clouds: similar temperature of nitric acid condensation and cloud formation.

Pueschel, R.F., Snetsinger, K.G., Hamill, P., Goodman, J.K., McCormick, M.P., *Geophysical research letters,* Mar. 1990, 17(4)suppl., p.429-432, 20 refs.

Climatology, Polar atmospheres, Cloud physics, Polar stratospheric clouds, Aerosols, Condensation, Temperature effects, Chemical properties, Heterogeneous nucleation, Sampling, Aerial surveys

50-5998

Measurements of stratospheric gaseous nitric acid in the winter arctic vortex using a novel rocket-borne mass spectrometric method.

Schlager, H., Arnold, F., *Geophysical research letters,* Mar. 1990, 17(4)suppl., p.433-436, 13 refs.

Climatology, Polar atmospheres, Stratosphere, Atmospheric density, Spectroscopy, Sounding, Aerial surveys, Atmospheric composition, Aerosols, Profiles, Condensation

50-5999

Balloon-borne measurements of total reactive nitrogen, nitric acid, and aerosol in the cold arctic stratosphere.

Kondo, Y., et al, *Geophysical research letters,* Mar. 1990, 17(4)suppl., p.437-440, 16 refs.

Climatology, Polar atmospheres, Aerosols, Ozone, Atmospheric composition, Stratosphere, Sounding, Sampling, Heterogeneous nucleation, Stratification

50-6000

Denitrification of the polar winter stratosphere: implications of SAM II cloud formation temperatures.

Hamill, P., Toon, O.B., *Geophysical research letters,* Mar. 1990, 17(4)suppl., p.441-444, 7 refs.

Climatology, Polar atmospheres, Polar stratospheric clouds, Cloud physics, Air temperature, Profiles, Atmospheric density, Condensation, Temperature effects, Photometry

50-6001

Denitrification mechanisms in the polar stratospheres.

Toon, O.B., Turco, R.P., Hamill, P., *Geophysical research letters,* Mar. 1990, 17(4)suppl., p.445-448, 19 refs.

Climatology, Polar atmospheres, Stratosphere, Atmospheric density, Sedimentation, Degradation, Aerosols, Heterogeneous nucleation, Ice vapor interface, Simulation, Models

Microphysical simulations suggest that the time required for nitric acid particles to sediment from the stratosphere is comparable to the time required for falling ice particles to incorporate nitric acid vapor from the vapor phase. Since nitric acid particles form earlier in the winter than ice particles, these simulations favor denitrification being a separate process from dehydration, with denitrification being due to nitric acid particles and dehydration due to ice particles. In the authors' simulations, the column abundance of nitric acid is only depleted if temperatures low enough for nitric acid particles to exist extend to the altitude above which the column is measured. Such low temperatures are infrequent in the arctic lower stratosphere, which may be the main reason that the arctic stratospheric column shows little loss of nitric acid during winter, while the colder antarctic stratospheric column shows a substantial loss of nitric acid. (Auth. mod.)

50-6002

Redistribution of reactive odd nitrogen in the lower arctic stratosphere.

Hübler, G., et al, *Geophysical research letters,* Mar. 1990, 17(4)suppl., p.453-456, 18 refs.

Climatology, Polar atmospheres, Stratosphere, Atmospheric density, Aerosols, Distribution, Aerial surveys, Sampling, Sedimentation, Turbulent diffusion

50-6003

January 30, 1989 arctic polar stratospheric clouds (PSC) event: evidence for a mechanism of dehydration.

Gandrud, B.W., et al, *Geophysical research letters,* Mar. 1990, 17(4)suppl., p.457-460, 14 refs.

Climatology, Polar atmospheres, Polar stratospheric clouds, Cloud physics, Sampling, Aerosols, Particle size distribution, Desiccation, Atmospheric composition, Degradation

50-6004

Heterogeneous conversion of COF_2 to HF in polar stratospheric clouds.

Wofsy, S.C., et al, *Geophysical research letters,* Mar. 1990, 17(4)suppl., p.461-464, 10 refs.

Climatology, Polar atmospheres, Cloud physics, Heterogeneous nucleation, Polar stratospheric clouds, Aerial surveys, Atmospheric density

50-6005

Stratospheric constituent trends from ER-2 profile data.

Schoeberl, M.R., et al, *Geophysical research letters,* Mar. 1990, 17(4)suppl., p.469-472, 9 refs.

Climatology, Polar atmospheres, Stratosphere, Atmospheric density, Degradation, Photochemical reactions, Ozone, Advection, Aerial surveys, Sampling, Profiles, Cooling rate

50-6006

Airborne measurements of stratospheric constituents over the Arctic in the winter of 1989.

Mankin, W.G., Coffey, M.T., Goldman, A., Schoeberl, M.R., Lait, L.R., Newman, P.A., *Geophysical research letters,* Mar. 1990, 17(4)suppl., p.473-476, 9 refs.

Climatology, Polar atmospheres, Stratosphere, Atmospheric density, Aerial surveys, Spectroscopy, Infrared radiation, Radiation absorption, Spectra

50-6007

N_2O as a dynamical tracer in the arctic vortex.

Loewenstein, M., Podolske, J.R., Chan, K.R., Strahan, S.E., *Geophysical research letters,* Mar. 1990, 17(4)suppl., p.477-480, 13 refs.

Climatology, Polar atmospheres, Stratosphere, Aerosols, Atmospheric density, Turbulent diffusion, Profiles, Spectroscopy, Aerial surveys

50-6008

ATLAS instrument characterization: accuracy of the AASE and AAOE nitrous oxide data sets.

Loewenstein, M., Podolske, J.R., Strahan, S.E., *Geophysical research letters,* Mar. 1990, 17(4)suppl., p.481-484, 10 refs.

Climatology, Polar atmospheres, Stratosphere, Spectroscopy, Atmospheric density, Turbulent diffusion, Lasers, Aerial surveys, Aerosols, Accuracy

ATLAS, the Airborne Tunable Laser Absorption Spectrometer, was used to measure nitrous oxide in the 1987 Airborne Antarctic Ozone Experiment (AAOE) and in the 1989 Airborne Arctic Stratospheric Expedition (AASE). After the AASE, a detailed study of the ATLAS characteristics was undertaken to quantify the error inherent in the *in-situ* measurement of atmospheric N_2O. Using the latest calibration of the ATLAS (June 1989) and incorporating the recognized errors arising in the flight environment of ATLAS, the authors established that for both the AASE and the AAOE most of the acquired N_2O data sets are accurate to ±10% (2 sigma). Data from two of the earlier AAOE flights had a larger uncertainty. (Auth. mod.)

50-6009

Measurements of total reactive nitrogen during the Airborne Arctic Stratospheric Expedition.

Kawa, S.R., Fahey, D.W., Anderson, L.C., Loewenstein, M., Chan, K.R., *Geophysical research letters,* Mar. 1990, 17(4)suppl., p.485-488, 13 refs.

Climatology, Polar atmospheres, Stratosphere, Aerial surveys, Sampling, Atmospheric density, Aerosols, Distribution

Composite distributions of measured total reactive nitrogen (NO_y) from the NASA ER-2 during the Airborne Arctic Stratospheric Expedition (AASE) are presented. The observed features of these distributions are discussed in terms of the controlling dynamical, chemical, and microphysical processes. The features of the distribution are apparently dynamically controlled. Poleward of 5° of latitude within the boundary, the average NO_y decreases sharply and is significantly lower than that predicted from N_2O. This feature is consistent with loss of NO_y through sedimentation of particles containing NO_y in polar stratospheric clouds. The observed loss is not as systematic as in the Antarctic, consistent with the observed differences in season and meteorological conditions between the two campaigns. (Auth. mod.)

50-6010

Nitric oxide measurements in the arctic winter stratosphere.

Fahey, D.W., Kawa, S.R., Chan, K.R., *Geophysical research letters,* Mar. 1990, 17(4)suppl., p.489-492, 16 refs.

Climatology, Polar atmospheres, Stratosphere, Aerial surveys, Sampling, Atmospheric composition, Aerosols, Profiles, Photochemical reactions

50-6011

In situ measurements of NO_x in the Airborne Arctic Stratospheric Expedition.

Carroll, M.A., Montzka, D.D., Hübler, G., Kelly, K.K., Gregory, G.L., *Geophysical research letters,* Mar. 1990, 17(4)suppl., p.493-496, 18 refs.

Climatology, Polar atmospheres, Stratosphere, Atmospheric composition, Aerosols, Distribution, Aerial surveys, Sampling, Profiles, Turbulent diffusion

50-6012

Near UV atmospheric absorption measurements of column abundances during Airborne Arctic Stratospheric Expedition, January-Feburary 1989. 1. Technique and NO_2 observations.

Wahner, A., Callies, J., Dorn, H.P., Platt, U., Schiller, C., *Geophysical research letters,* Mar. 1990, 17(4)suppl., p.497-500, 15 refs.

Climatology, Polar atmospheres, Stratosphere, Atmospheric density, Degradation, Solar radiation, Radiation absorption, Aerial surveys, Spectroscopy, Spectra, Aerosols

50-6013

Near UV atmospheric absorption measurements of column abundances during Airborne Arctic Stratospheric Expedition, January-February 1989. 2. OClO observations.

Schiller, C., Wahner, A., Platt, U., Dorn, H.P., Callies, J., Ehhalt, D.H., *Geophysical research letters,* Mar. 1990, 17(4)suppl., p.501-504, 17 refs.

Climatology, Polar atmospheres, Stratosphere, Aerosols, Spectroscopy, Spectra, Atmospheric density, Solar radiation, Radiation absorption

50-6014

In situ observations of ClO in the arctic stratosphere: ER-2 aircraft results from 59°N to 80°N latitude.

Brune, W.H., Toohey, D.W., Anderson, J.G., Chan, K.R., *Geophysical research letters,* Mar. 1990, 17(4)suppl., p.505-508, 7 refs.

Climatology, Polar atmospheres, Stratosphere, Aerial surveys, Sampling, Aerosols, Atmospheric density, Degradation, Turbulent diffusion

50-6015

In situ measurements of BrO in the arctic stratosphere.

Toohey, D.W., Anderson, J.G., Brune, W.H., Chan, K.R., *Geophysical research letters,* Mar. 1990, 17(4)suppl., p.513-516, 19 refs.

Climatology, Polar atmospheres, Stratosphere, Atmospheric density, Aerosols, Aerial surveys, Sampling, Turbulent diffusion, Photochemical reactions, Statistical analysis

50-6016

Near UV atmospheric absorption measurements of column abundances during Airborne Arctic Stratospheric Expedition, January-February 1989. 3. BrO observations.

Wahner, A., Callies, J., Dorn, H.P., Platt, U., Schiller, C., *Geophysical research letters,* Mar. 1990, 17(4)suppl., p.517-520, 15 refs.

Climatology, Polar atmospheres, Stratosphere, Atmospheric density, Solar radiation, Radiation absorption, Aerial surveys, Photochemical reactions, Spectroscopy, Aerosols, Atmospheric density

50-6017

Reconstruction of O_3 and N_2O fields from ER-2, DC-8, and balloon observations.

Lait, L.R., et al, *Geophysical research letters,* Mar. 1990, 17(4)suppl., p.521-524, 7 refs.

Climatology, Polar atmospheres, Stratosphere, Aerial surveys, Sampling, Aerosols, Ozone, Distribution, Chemical composition, Atmospheric density

50-6018

Global three-dimensional constituent fields derived from profile data.

Douglass, A.R., et al, *Geophysical research letters,* Mar. 1990, 17(4)suppl., p.525-528, 9 refs.

Climatology, Stratosphere, Global change, Polar atmospheres, Atmospheric composition, Aerosols, Ozone, Profiles, Distribution, Simulation

50-6019

Three dimensional simulation of hydrogen chloride and hydrogen fluoride during the Airborne Arctic Stratospheric Expedition.

Kaye, J.A., et al, *Geophysical research letters,* Mar. 1990, 17(4)suppl., p.529-532, 14 refs.

Climatology, Polar atmospheres, Stratosphere, Atmospheric density, Degradation, Aerosols, Distribution, Simulation

50-6020

Effects of atmospheric transport on column abundances of nitrogen and chlorine compounds in the arctic stratosphere.

Yatteau, J.H., et al, *Geophysical research letters,* Mar. 1990, 17(4)suppl., p.533-536, 23 refs.

Climatology, Polar atmospheres, Stratosphere, Aerosols, Distribution, Atmospheric density, Heterogeneous nucleation, Advection, Simulation

50-6021

Polar stratospheric cloud event of January 24, 1989, part 1. Microphysics.

Poole, L.R., et al, *Geophysical research letters,* Mar. 1990, 17(4)suppl., p.537-540, 13 refs.

Climatology, Polar atmospheres, Polar stratospheric clouds, Cloud physics, Aerial surveys, Spectroscopy, Probes, Sampling, Heterogeneous nucleation, Photochemical reactions

50-6022

Polar stratospheric cloud event of January 24: part 2, photochemistry.

Jones, R.L., et al, *Geophysical research letters,* Mar. 1990, 17(4)suppl., p.541-544, 7 refs.

Climatology, Polar atmospheres, Polar stratospheric clouds, Cloud physics, Atmospheric density, Aerosols, Photochemical reactions, Aerial surveys, Sampling, Models

50-6023

On the influence of polar stratospheric cloud formation on chemical composition during the 1988/89 arctic winter.

Jones, R.L., McKenna, D.S., Poole, L.R., Solomon, S., *Geophysical research letters,* Mar. 1990, 17(4)suppl., p.545-548, 20 refs.

Climatology, Polar atmospheres, Polar stratospheric clouds, Atmospheric density, Chemical composition, Aerosols, Ozone, Atmospheric circulation, Heterogeneous nucleation, Models

50-6024

Simulating the evolution of the chemical composition of the 1988/89 winter vortex.

Jones, R.L., McKenna, D.S., Poole, L.R., Solomon, S., *Geophysical research letters,* Mar. 1990, 17(4)suppl., p.549-552, 10 refs.

Climatology, Polar atmospheres, Stratosphere, Chemical composition, Aerosols, Photochemical reactions, Degradation, Turbulent diffusion, Simulation

50-6025

Calculations of ozone destruction during the 1988/89 arctic winter.

McKenna, D.S., et al, *Geophysical research letters,* Mar. 1990, 17(4)suppl., p.553-556, 6 refs.

Climatology, Polar atmospheres, Stratosphere, Cloud physics, Atmospheric density, Aerosols, Ozone, Degradation, Photochemical reactions, Air flow, Models

50-6026

Studies of arctic stratospheric ozone in a 2-D model including some effects of zonal asymmetries.

Isaksen, I.S.A., Rognerud, B., Stordal, F., Coffey, M.T., Mankin, W.G., *Geophysical research letters,* Mar. 1990, 17(4)suppl., p.557-560, 10 refs.

Polar atmospheres, Climatology, Cloud physics, Polar stratospheric clouds, Atmospheric density, Degradation, Ozone, Aerosols, Photochemical reactions, Heterogeneous nucleation, Models

50-6027

Loss of ozone in the arctic vortex for the winter of 1989.

Salawitch, R.J., et al, *Geophysical research letters,* Mar. 1990, 17(4)suppl., p.561-564, 19 refs.

Climatology, Polar atmospheres, Stratosphere, Atmospheric density, Degradation, Diurnal variations, Photochemical reactions, Ozone, Aerial surveys, Sampling

50-6028

Measurements of nitrogen oxides in the Arctic.

Honrath, R.E., Jaffe, D.A., *Geophysical research letters*, Apr. 1990, 17(5), p.611-614, 23 refs.

Polar atmospheres, Climatology, Aerosols, Atmospheric composition, Sampling, Diurnal variations, Photochemical reactions

50-6029

Proceedings of the NIPR Symposium on Polar Biology, No.9.

Hirasawa, T., ed, NIPR Symposium on Polar Biology, 17th, Tokyo, Dec. 7-9, 1994, Tokyo, National Institute of Polar Research, Feb. 1996, 348p., Refs. passim. For selected papers see B-55446 through B-55464 or 50-6030 through 50-6037.

Marine biology, Ecology, Sea ice, Algae

This volume is a compilation of 29 full length papers, 19 of which are pertinent to Antarctica, presented at the 17th Symposium on Polar Biology held in Tokyo on Dec. 7-9, 1994. The aim of the Symposium was to introduce new results obtained in the polar region covering marine and terrestrial biology. The main theme of the Symposium was sea ice ecology, particularly the ice algae in Antarctica. The program of the Symposium and an author index conclude the volume.

50-6030

Ice algal investigations: historical perspective.

Horner, R.A., NIPR Symposium on Polar Biology, Proceedings. No.9, Tokyo, National Institute of Polar Research, Feb. 1996, p.1-12, Refs. p.7-12.

Sea ice, Algae, Research projects, History

Organisms that live in sea ice have been known and studied for over 150 years. The earliest studies were done on samples collected during voyages of exploration and are mainly lists of species. Experimental investigations began in the 1960s and in the subsequent 20 years consisted primarily of pioneering studies on primary productivity, biomass, spatial and temporal distributions, and composition and abundance of the biota. By the 1980s, there were better techniques for measuring primary productivity and biomass and more emphasis was placed on physiological studies. Much of this work was done from shore-based stations. In the late 1970s, ice-breaking or ice-strengthened research vessels became available and since then, large multi-disciplinary investigations involving biologists, ice physicists and chemists have worked mostly in the marginal seas of polar regions. Drifting ice floe and ice island stations have provided information from the central Arctic Ocean since the 1930s, and in 1992 from the Weddell Sea. (Auth.)

50-6031

Significance of autumnal sea ice biota in the ecosystem of ice-covered polar seas.

Hoshiai, T., Tanimura, A., Kudoh, S., NIPR Symposium on Polar Biology, Proceedings. No.9, Tokyo, National Institute of Polar Research, Feb. 1996, p.27-34, Refs. p.33-34.

Marine biology, Algae, Biomass, Ice cover effect, Ecology, Sea ice, Antarctica—Showa Station

Autumnal sea ice proliferation occurs at Showa Station. The algal cells produced support the ice meiofauna and possibly planktonic and benthic consumers. However, the autumnal bloom of ice algae has received little attention from polar biologists during a long-term history of sea ice biota research. The geographical distribution and ecological importance and function of the autumnal ice algal community are reviewed here and compared with the spring ice community. (Auth.)

50-6032

Freezing driven upwelling in antarctic sea ice biological systems.

Ackley, S.F., Fritsen, C.H., Lytle, V.I., Sullivan, C.W., MP 3850, NIPR Symposium on Polar Biology, Proceedings. No.9, Tokyo, National Institute of Polar Research, Feb. 1996, p.45-59, 23 refs.

Pack ice, Upwelling, Sea water freezing, Convection, Algae, Marine biology, Ice cover effect, Ecology, Antarctica—Weddell Sea

Within existing ice covers, fluid motion can also be driven by freezing-induced convection. Surface snow-slush and near-surface highly porous layers were found in the pack ice at Ice Station Weddell in the western Weddell Sea at the end of summer and examined for physical and biological processes. Convective fluid motion, driven by brine rejection from the ice freezing from above as air temperatures dropped, replaced nutrient depleted waters in the layers with nutrient-rich sea water from below. The upwelling nutrients fueled autumn blooms of algae in second-year ice in the near surface regions of the ice cover where sufficient light is also available. Both the timing and location of these blooms within the ice cover are unlike the bottom spring blooms of sea ice algae previously observed. (Auth.)

50-6033

Biological CO_2 pump in seasonally ice-covered waters.

Legendre, L., NIPR Symposium on Polar Biology, Proceedings. No.9, Tokyo, National Institute of Polar Research, Feb. 1996, p.61-74, Refs. p.71-74.

Marine biology, Biomass, Algae, Plankton, Microbiology, Air water interactions, Chemical composition, Ice cover effect, Sea ice, Oceanography

Pools of biogenic carbon in oceans have been defined by reference to the time elapsed between the photosynthetic uptake of carbon and its return as carbon dioxide to surface waters or the atmosphere (i.e. turnover time). In these waters there is a wide array of pathways that channel 3 size classes of primary production into long-lived and sequestered biogenic carbon. Biogenic carbon is often actively transferred from ice algae to large metazoans. Small biogenic particles can escape the short-lived carbon pool through grazing by microphagous zooplankton such as pteropods, doliolids, appendicularians and antarctic krill, or through incorporation into organic aggregates. In addition, there are direct and indirect sedimentation pathways for ice-related algae. The alternation between biological pumping of CO_2 during the ice-free season and algal carbon uptake during the ice-covered period creates unique conditions for the potential sequestration of atmospheric CO_2. (Auth. mod.)

50-6034

Marine snow in antarctic coastal waters.

Marchant, H.J., Watanabe, K., Kawachi, M., NIPR Symposium on Polar Biology, Proceedings. No.9, Tokyo, National Institute of Polar Research, Feb. 1996, p.75-83, Refs. p 82-83.

Marine biology, Microbiology, Sea ice, Sea water, Plankton, Algae, Antarctica—Mawson Station, Antarctica—Prydz Bay

The abundance of marine snow in antarctic coastal waters was investigated by using a video camera on a remotely operated vehicle in the 1991-92 summer. In the 1993-94 summer, marine snow was collected by divers near Showa Station to investigate the species composition of the constituent organisms and their Enrichment Factor (defined as the concentration of organisms in marine snow divided by their concentration in the adjacent water devoid of marine snow). The abundance of marine snow aggregates >1 mm differed widely from <0.1/l to >10/l. Marine snow collected in mid Jan. 1994 consisted principally of diatoms and mucilage derived from the sea-ice community while the collections made at the end of that month contained much colonial *Phaeocystis*. The Enrichment Factor was around 10 for bacteria and varied from around 200 to over 600 for eukaryotic protists. The abundance of polysaccharide-containing particles remained approximately constant during Jan. and early Feb. but the size of these particles increased during this time, reflecting an increase in the abundance of large colonies of *Phaeocystis*. (Auth. mod.)

50-6035

On the salinity tolerance of the planktonic foraminifer *Neogloboquadrina pachyderma* from antarctic sea ice.

Spindler, M., NIPR Symposium on Polar Biology, Proceedings. No.9, Tokyo, National Institute of Polar Research, Feb. 1996, p.85-91, Refs. p.90-91.

Marine biology, Algae, Brines, Sea ice, Ice composition, Antarctica—Weddell Sea

The sea ice of both polar regions contains an internal system of delicate brine channels and pockets which serve as a habitat for a variety of organisms including plants and animals. The large standing stock of algae in the ice provides an ample food source for heterotrophic consumers. The sea ice habitat is characterized by low temperatures and correspondingly high salinities. During winter, temperatures as low as -15°C and salinities as high as 177 psu have been recorded in the brine channel system of the upper part of antarctic sea ice. The tolerance of sympagic organisms to such increased salinities is remarkable. Algae grow in salinities of up to 95 psu and also sea ice animals can survive, grow and partly reproduce under high salinities. The foraminifer *Neogloboquadrina pachyderma* was subjected to a variety of different salinities. Reproduction was never observed in salinities above 50 psu, which corroborates earlier results that *N. pachyderma* does not reproduce within the sea ice. (Auth. mod.)

50-6036

Occurrence and distribution of the planktonic foraminifer *Neogloboquadrina pachyderma* within annual and perennial sea ice of the eastern part of Lützow-Holm Bay, Antarctica.

Igarashi, A., Numanami, H., Tsuchiya, Y., Fukuchi, M., NIPR Symposium on Polar Biology, Proceedings. No.9, Tokyo, National Institute of Polar Research, Feb. 1996, p.93-110, 18 refs.

Marine biology, Ecology, Sea ice, Ice formation, Ice cores, Ice cover thickness, Antarctica—Lützow-Holm Bay

At Station A-5, situated about 3 km east of Showa Station, the planktonic foraminifer *Neogloboquadrina pachyderma* with cytoplasm is present mainly within sections between 20 and 40 cm from the top of ice cores. At Station A-2, located near Showa Station, they are confined predominantly to the lowermost 50 cm sections of the cores. At Station D, located about 20 km west of Showa Station, they are distributed maximally within sections between 210 and 244 cm from the tops of the cores. Considering the vertical distribution of foraminifers within sea ice and the time of freezing of sea ice, the main time of foraminiferal incorporation is estimated to be from mid-Apr. to mid-May. The foraminifers probably congregate in the uppermost part of the water column in order to feed on abundant diatoms during spring and summer. Until the onset of ice formation from late Apr. to mid-May, they may still remain there and are likely to be accidentally incorporated into the sea ice. (Auth. mod.)

50-6037

Differences in development of summer phytoplankton bloom under fast ice around Syowa Station, Antarctica.

Odate, T., Fukuchi, M., NIPR Symposium on Polar Biology, Proceedings. No.9, Tokyo, National Institute of Polar Research, Feb. 1996, p.125-130, 14 refs.

Plankton, Biomass, Fast ice, Sea water, Chemical composition, Ice cover effect, Antarctica—Showa Station

Temporal changes in phytoplankton abundance under antarctic fast ice were investigated at 3 sites around Showa Station from Jan. 5 to Feb. 6, 1992: in the western part of Ongul Strait (Station A) and in Kita-no-ura Cove (Stations B and C). Fast ice was thicker and snow coverage was heavier in the last 2 sites. Prominent blooms were observed at both areas when air temperature increased. Chlorophyll *a* abundance within the 5-30 m water column rapidly increased from Jan. 12 to 17 and reached a maximum of 226 mg/m^2 at Station A; the increase was more gradual at Stations B and C. The maximum abundances occurred on Jan. 21-23 at Stations B and C, and corresponded to 65 and 53% of the maximum at Station A, respectively. The observed difference in bloom development seems to result from light availability, which was affected by ice and its condition. (Auth.)

50-6038

Capillary bonding of wet surfaces.

Colbeck, S.C., MP 3851, *Surface and coatings technology*, June 1996, 81(2-3), p.209-214, 5 refs.

Skis, Plastics snow friction, Plastics ice friction, Ice adhesion, Water films, Interfacial tension, Capillarity, Mathematical models

Adhesion of wet surfaces to one another through a water film is common and important for a variety of problems. The nature of this adhesion is explored through a simple model of a grooved polyethylene surface, i.e. a ski, adhering to ice. The effects of contact angle and geometry are included. A set of experiments was performed to show how contact area and adhesive force vary with water tension for glass on porous ceramic. The results show that the model describes the general characteristics of the adhesion but further experiments are necessary for materials of particular interest.

50-6039

On snow crystals with small raindrops observed in Greenland.

Harimaya, T., Kikuchi, K., Sakurai, K., *Hokkaido University. Faculty of Science. Journal. Series VII (Geophysics)*, Feb. 1993, 9(3), p.325-339, 9 refs.

Snow crystal growth, Snow crystal structure, Snow crystal nuclei, Snow pellets, Condensation nuclei, Raindrops, Ice crystal adhesion, Ice crystal size, Coalescence, Greenland

50-6040

Dynamical approach to the maintenance process of the long-lasting convergence band clouds along the west coast of Hokkaido.

Kobayashi, F., Kikuchi, K., *Hokkaido University. Faculty of Science. Journal. Series VII (Geophysics)*, Feb. 1993, 9(3), p.365-379, 12 refs.

Cloud cover, Cloud physics, Marine meteorology, Air water interactions, Fronts (meteorology), Snowfall, Snowstorms, Japan—Hokkaido

50-6041

Single Doppler radar observation of vortical snow storm on the Ishikari Plain, Hokkaido, Japan.

Shirooka, R., Uyeda, H., *Hokkaido University. Faculty of Science. Journal. Series VII (Geophysics)*, Feb. 1994, 9(4), p.405-413, 8 refs.

Snowstorms, Atmospheric disturbances, Marine meteorology, Radar tracking, Japan—Hokkaido

50-6042

Effect of Eurasian snow cover on regional and global climate variations.
Barnett, T.P., Dümenil, L., Schlese, U., Roeckner, E., Latif, M., *Hamburg. Universität. Geologisch-Paläontologisches Institut. Mitteilungen,* 1993, No.76, p.1-9, 23 refs. For another version see 48-1676.
DLC QE1.H3 v.76 1993
Snow cover distribution, Snow air interface, Snow heat flux, Snow cover effect, Atmospheric circulation, Global change

50-6043

Hydrological and hydrochemical response of a small Canadian shield catchment to late winter rain-on-snow events.
Maclean, R.A., English, M.C., Schiff, S.L., *Hydrological processes,* Nov.-Dec. 1995, 9(8), p.845-863, 46 refs. For another version see 50-3125.
Watersheds, Rain, Snow hydrology, Snow composition, Snowmelt, Stream flow, Seepage, Ground water, Hydrogeochemistry, Water chemistry, Canada—Ontario

50-6044

Accuracy of Tretyakov precipitation gauge: result of WMO intercomparison.
Yang, D.Q., Bates, R., Pangburn, T., MP 3852, *Hydrological processes,* Nov.-Dec. 1995, 9(8), p.877-895, 43 refs. For another version see 50-3115.
Snowfall, Blowing snow, Precipitation gages, Snow fences, Wind factors, Weather stations, Statistical analysis
From 1986 to 1993, the accuracy and performance of the Tretyakov gauge was evaluated during the WMO Solid Precipitation Measurement Intercomparison at 11 stations in Canada, the USA, Russia, Germany, Finland, Romania and Croatia. The double fence intercomparison reference (DFIR) was the reference standard used at all the Intercomparison stations in the Intercomparison. The Intercomparison data collected at the different sites are compatible with respect to the catch ratio (measured/DFIR) for the same gauge, when compared using mean wind speed at the height of the gauge orifice during the observation period. The Intercomparison data for the Tretyakov gauge were compiled from measurements made at these WMO intercomparison sites. These data represent a variety of climates, terrains and exposures. The effects of environmental factors, such as wind speed, wind direction, type of precipitation and temperature, on gauge catch ratios were investigated. Wind speed was found to be the most important factor determining the gauge catch and air temperature had a secondary effect when precipitation was classified into snow, mixed and rain. The results of the analysis of gauge catch ratio versus wind speed and temperature on a daily time step are presented for various types of precipitation.

50-6045

Dissolution kinetics, transit times through subglacial hydrological pathways and diurnal variations of solute content of meltwaters draining from an Alpine glacier.
Collins, D.N., *Hydrological processes,* Nov.-Dec. 1995, 9(8), p.897-910, 18 refs. For another version see 50-3124.
Glacial hydrology, Subglacial drainage, Meltwater, Outwash, Suspended sediments, Hydrogeochemistry, Water chemistry, Diurnal variations, Switzerland

50-6046

Hydrometeorological relationships in a glacierized catchment in the Canadian high Arctic.
Wolfe, P.M., English, M.C., *Hydrological processes,* Nov.-Dec. 1995, 9(8), p.911-921, 21 refs. For another version see 50-3123.
Glacial hydrology, Glacial meteorology, Glacier melting, Snow ice interface, Snowmelt, Slush, Subglacial drainage, Stream flow, Runoff forecasting, Statistical analysis, Canada—Northwest Territories—Ellesmere Island

50-6047

Scaling snowdrift development rate.
Lever, J.H., Haehnel, R.B., MP 3853, *Hydrological processes,* Nov.-Dec. 1995, 9(8), p.935-946, 40 refs. For another version see 50-3114.
Snowdrifts, Snow erosion, Wind erosion, Snow air interface, Snow loads, Snow fences, Wind tunnels, Environmental tests, Mathematical models
For successful snowdrift modelling, measured drift shapes should be geometrically similar to full-scale shapes and develop at rates that scale in a known manner. Consensus exists on most modelling methods and the similitude requirements needed to meet these objectives. A notable exception is the manner to scale drift development rates. A rationale is presented for rate scaling based on an independent model and prototype mass transport measurements. This approach is validated by comparing the rate of drift development for a model Wyoming snow fence with corresponding field data. This method yields excellent agreement, whereas the alternatives differ substantially.

50-6048

Handbook for field evaluation of the 600 ROWPU winterization kit.
U.S. Army Cold Regions Research and Engineering Laboratory, Ft. Wainwright, Dec. 1990, 49p.
Manuals, Pumps, Cold weather operation, Water pipes, Flow control, Electric heating, Water treatment, Water storage

50-6049

Mechanical properties of materials at low temperatures.
Wigley, D.A., *Cryogenics,* Feb. 1968, p.3-12, 24 refs.
Cryogenics, Metals, Composite materials, Mechanical properties, Temperature effects, Stress strain diagrams, Brittleness, Cracking (fracturing), Low temperature tests, Thermal analysis

50-6050

Incorporation of a drainage layer and infiltration into FROST.
Abdel-Salam, A., Guymon, G.L., Hanover, U.S. Army Cold Regions Research and Engineering Laboratory, Jan. 1993, 30p. + appends., 7 refs.
Pavement bases, Subsurface drainage, Soil profiles, Frost heave, Frost action, Capillarity, Frozen ground expansion, Ice water interface, Seepage, Soil water migration, Water flow, Design criteria, Computer programs, Computerized simulation

50-6051

Aircraft measurements of the stable carbon isotopic ratio of atmospheric methane over Siberia.
Sugawara, S., et al, *Global biogeochemical cycles,* June 1996, 10(2), p.223-231, 43 refs.
Climatology, Atmospheric boundary layer, Atmospheric composition, Aerial surveys, Wetlands, Soil air interface, Vapor transfer, Sampling, Carbon isotopes, Natural gas, Isotope analysis, Climatic factors, Environmental impact, Geochemical cycles, Russia—Siberia

50-6052

Winter methane dynamics in a temperate peatland.
Melloh, R.A., Crill, P.M., MP 3854, *Global biogeochemical cycles,* June 1996, 10(2), p.247-254, 14 refs.
Climatology, Wetlands, Frozen ground mechanics, Peat, Soil air interface, Natural gas, Soil freezing, Freezing front, Ice cover effect, Ice water interface, Snow air interface, Snow stratigraphy, Vapor diffusion, Sampling, Seasonal variations
Methane (CH_4) dynamics in pore water, snow pore air, and surface emissions were investigated in a temperate poor fen in New Hampshire over several winters. Total snowfall and average air temperatures during winter months (defined as Dec., Jan., and Feb.) were climatologic indicators of significant flux rates from this mid-latitude poor fen. Totaling emissions over 5 years that represent low to average snowfall, winter accounted for 4.3% of emissions to the atmosphere. Winter flux rates were near 55 mg/m^2/d for years with average snowfall, and 25 mg/m^2/d for years with low snowfall. Concentrations of CH_4 sampled in pore water immediately beneath the ice were highly variable (0 to 1.1 mM). The concentration magnitude and standard deviation increased toward the fen center and correlated with spatial variation in hydrology, peat texture, and peat depth. CH_4 stores increased in the near-surface pore water as the ice cover formed. Seasonal CH_4 buildup in deeper peat began near the end of the growing season, probably due to changing transport mechanisms and temperature effects on solubility.

50-6053

Controls on CH_4 flux from an Alaskan boreal wetland.
Moosavi, S.C., Crill, P.M., Pullman, E.R., Funk, D.W., Peterson, K.M., *Global biogeochemical cycles,* June 1996, 10(2), p.287-296, 43 refs.
Climatology, Soil chemistry, Sampling, Climatic changes, Natural gas, Atmospheric composition, Wetlands, Soil air interface, Vapor transfer, Geochemistry, Water table, Seasonal variations, Temperature effects, United States—Alaska—Fairbanks

50-6054

Assessing the reliability of determination of the bearing capacity of piles in frozen soils (from construction rule and regulation 2.02.04-88).
Mirenburt, IU.S., *Soil mechanics and foundation engineering,* Jan. 1996, 32(4), p.143-146, Translated from Osnovaniia, fundamenty i mekhanika gruntov. 10 refs.
Pile structures, Bearing strength, Frozen ground mechanics, Frozen ground strength, Permafrost beneath structures, Design criteria, Analysis (mathematics)

50-6055

High-latitude climate change in a global coupled ocean-atmosphere-sea ice model with increased atmospheric CO_2.
Washington, W.M., Meehl, G.A., *Journal of geophysical research,* May 27, 1996, 101(D8), p.12,795-12,801, 24 refs.
Climatology, Climatic changes, Global warming, Surface temperature, Aerosols, Air ice water interaction, Ice melting, Carbon dioxide, Sea ice distribution, Ice cover effect, Albedo, Cloud cover, Models

50-6056

Application of a subgrid orographic precipitation surface hydrology scheme to a mountain watershed.
Leung, L.R., Wigmosta, M.S., Ghan, S.J., Epstein, D.J., Vail, L.W., *Journal of geophysical research,* May 27, 1996, 101(D8), p.12,803-12,817, 25 refs.
Climatology, Watersheds, Surface drainage, Stream flow, Precipitation (meteorology), Snow hydrology, Snowmelt, Snow water equivalent, Mathematical models, Simulation

50-6057

Ice flow and mass continuity of Shumsky Glacier in the Djungarski Alatau Range of Kazakhstan, central Asia.
Cherkasov, P.A., Akhmetova, G.S., Hastenrath, S., *Journal of geophysical research,* May 27, 1996, 101(D8), p.12,913-12,920, 20 refs.
Climatology, Mountain glaciers, Glacier surveys, Glacier flow, Velocity measurement, Glacier mass balance, Ice volume, Ice melting, Periodic variations, Rheology, Mathematical models, Kazakhstan—Shumsky Glacier

50-6058

Surface layers on ice.
Knight, C.A., *Journal of geophysical research,* May 27, 1996, 101(D8), p.12,921-12,928, 37 refs.
Ice physics, Ice surface, Surface structure, Layers, Ice melting, Ice crystal growth, Phase transformations, Ice vapor interface, Ice air interface, Thermodynamics, Ice models, Simulation

50-6059

Comment on "Surface layers on ice" by C.A. Knight.
Baker, M.B., Dash, J.G., Knight, C.A., *Journal of geophysical research,* May 27, 1996, 101(D8), p.12,929-12,936, 46 refs. Includes reply.
Ice physics, Ice surface, Ice melting, Ice water interface, Ice vapor interface, Phase transformations, Thermodynamics, Molecular energy levels, Mathematical models

50-6060

Manual of practice for an effective anti-icing program: a guide for highway winter maintenance personnel.
Ketcham, S.A., Minsk, L.D., Blackburn, R.R., Fleege, E.J., MP 3855, U.S. Department of Transportation. Federal Highway Administration. Office of Engineering Research and Development. Report No.95-202, McLean, June 1996, 63p., 6 refs.
Road maintenance, Winter maintenance, Road icing, Ice prevention, Antifreezes, Brines, Chemical composition, Freezing points, Manuals, Ice control, Snow removal equipment
This manual provides information for successful implementation of an effective highway anti-icing program. It is written to guide the maintenance manager in developing a systematic and efficient practice for maintaining roads in the best conditions possible during a winter storm. It describes the significant factors that should be understood and must be addressed in an anti-icing program, with the

recognition that the development of the program must be based on the specific needs to the site or region within its reach. The manual includes recommendations for anti-icing practices and guidance for conducting anti-icing operations during specific precipitation and weather events.

50-6061

Fargo snowstorm of 6-8 January 1989.

Weisman, R.A., *Weather and forecasting,* June 1996, 11(2), p.198-215, 40 refs.

Climatology, Synoptic meteorology, Turbulent boundary layer, Precipitation (meteorology), Fronts (meteorology), Gravity waves, Snowstorms, Weather forecasting

50-6062

Synoptic climatological approach to the analysis of lake-effect snowfall: potential forecasting applications.

Ellis, A.W., Leathers, D.J., *Weather and forecasting,* June 1996, 11(2), p.216-229, 41 refs.

Climatology, Synoptic meteorology, Precipitation (meteorology), Snowfall, Lake effects, Classifications, Snow air interface, Atmospheric pressure, Wind direction, Seasonal variations, Weather forecasting

50-6063

Earth rotation, ocean circulation and paleoclimate.

Mörner, N.A., *GeoJournal,* Dec. 1995, 37(4), p.419-430, 68 refs.

Paleoclimatology, Climatic changes, Heat flux, Oceanography, Ocean currents, Air water interactions, Sea level, Glacier melting, Meltwater, Periodic variations

50-6064

Glacial isostatic uplift of Tibet as a consequence of a former ice sheet.

Kuhle, M., *GeoJournal,* Dec. 1995, 37(4), p.431-449, 43 refs.

Pleistocene, Paleoclimatology, Tectonics, Earth crust, Geomorphology, Ice sheets, Glaciation, Snow line, Glacial geology, Moraines, Quaternary deposits, Isostasy, Ice cover effect, Theories, China—Tibet

50-6065

Microbial responses to nitrogen additions in alpine tundra soil.

Fisk, M.C., Schmidt, S.K., *Soil biology & biochemistry,* June 1996, 28(6), p.751-755, 30 refs.

Tundra soils, Tundra vegetation, Alpine tundra, Soil air interface, Sedimentation, Soil microbiology, Soil chemistry, Organic soils, Nutrient cycle, Biomass, Simulation

50-6066

Cold-climate constructed wetlands.

Mæhlum, T., Jenssen, P.D., Warner, W.S., *Water science & technology,* Aug. 1995, 32(3), International Conference on Wetland Systems for Water Pollution Control, 4th, Guangzhou, China, Nov. 6-10, 1994. Selected proceedings, p.95-101, 13 refs.

Water treatment, Sewage disposal, Waste treatment, Bacteria, Wetlands, Subsurface drainage, Filters, Adsorption, Cold weather operation, Climatic factors, Design, Snow cover effect

50-6067

Using reed beds for winter operation of wetland treatment system for wastewater.

Yin, H., Shen, W.R., *Water science & technology,* Aug. 1995, 32(3), International Conference on Wetland Systems for Water Pollution Control, 4th, Guangzhou, China, Nov. 6-10, 1994. Selected proceedings, p.111-117, 6 refs.

Sewage disposal, Sewage treatment, Water treatment, Wetlands, Subsurface drainage, Cold weather operation, Ice cover effect, Ice water interface, Temperature effects, Filters, Frost protection

50-6068

Design of ice booms.

Foltyn, E.P., Tuthill, A.M., TD 96-1, *U.S. Army Cold Regions Research and Engineering Laboratory. Technical digest,* Apr. 1996, 31p., ADA-310 197, 9 refs.

Ice booms, Lake ice, Floating ice, Ice control, Design, Design criteria, Anchors, Joints (junctions), Ice solid interface, Physical properties, Structural analysis

This technical digest provides basic engineering design guidance for floating ice retention structures or ice booms. Basic types of booms and their ice control objectives are described briefly. The basic theory and equations used in ice boom design are then presented and typical structural components described. The report addresses other design considerations such as boom layout, geometry, and anchor systems, as well as the selection of wire rope and connection systems, and concludes with an example of ice boom design at a site. This technical digest describes the actual design steps in greater detail, and elaborates on boom geometry and the forces acting on ice boom components.

50-6069

Solvation of hydrogen halides on the surface of ice.

Robertson, S.H., Clary, D.C., *Chemical Society, London. Faraday discussions,* 1995, Vol.100, p.309-320, 36 refs.

Polar atmospheres, Polar stratospheric clouds, Cloud physics, Heterogeneous nucleation, Ice vapor interface, Aerosols, Solubility, Molecular energy levels, Ion exchange, Proton transport, Simulation, Enthalpy

Heterogeneous processes on the surface of ice crystals in polar stratospheric clouds are thought to play a crucial role in the catalysis of reactions such as $HCl+ClONO_2$. An important consideration here is the mechanism of solvation of the HCl molecules on the ice surface. A molecular dynamics simulation of the solvation of HCl, HF and HBr by an ice surface at 190 K is reported. The model allows for the solvation of the hydrogen halide by water molecules on the ice surface to form solvated ions. The simulations suggest that the ionic solvation process is energetically feasible for HCl and HBr, but not for HF. (Auth.)

50-6070

Ecology and distribution of *Empetrum nigrum* ssp. *hermaphroditum* on Svalbard and Jan Mayen.

Elvebakk, A., Spjelkavik, S., *Nordic journal of botany,* 1995, 15(5), p.541-552, 48 refs.

Plant ecology, Tundra vegetation, Trees (plants), Distribution, Vegetation patterns, Geobotanical interpretation, Subpolar regions, Microclimatology, Norway—Jan Mayen, Norway—Svalbard

50-6071

H_2O on Io? IR spectra of SO_2/H_2O mixed ices in the 5000-450/cm region.

Dahmani, R., Khanna, R.K., *Astrophysics and space science,* Feb. 1996, 236(1), p.125-133, 18 refs.

Extraterrestrial ice, Satellites (natural), Ice surface, Regolith, Remote sensing, Infrared spectroscopy, Spectra, Reflectivity, Simulation, Ice physics, Temperature effects

50-6072

Dusting river ice with leaf mulch to aid in ice deterioration.

Haehnel, R.B., Clark, C.H., Taylor, S., SR 96-07, *U.S. Army Cold Regions Research and Engineering Laboratory. Special report,* Apr. 1996, 19p., ADA-310 083, 17 refs.

River ice, Albedo, Ice control, Ice melting, Dusting, Sediments, Plant tissues, Ice deterioration, Environmental protection, Hydraulic jets

In an effort to find a low cost means of reducing ice jams on small rivers in New England, dusting with organic matter was field tested during the spring of 1993 and 1994. Test squares on a pond located at CRREL in Hanover, NH were dusted with several materials to evaluate their effectiveness in accelerating snow melting and ice deterioration. Leaf mulch was included in the materials tested because, unlike other materials used in the past to weaken ice (e.g., fly ash or coal slag), leaves are naturally found in rivers and should not adversely affect aquatic organisms when applied in small quantities. It was found from these tests that the leaves perform about the same as the traditionally used dusting materials. To transfer what was learned at the pond tests to a field application, two rivers in Vermont, with a known history of ice jams, were dusted using leaf mulch during the spring of 1994. More work is needed to determine the effectiveness of leaf mulch to weaken ice and how much ice weakening is necessary to reduce the severity of ice jams.

50-6073

Ice force and scour instrumentation for the White River, Vermont.

Zabilansky, L.J., SR 96-06, *U.S. Army Cold Regions Research and Engineering Laboratory. Special report,* Apr. 1996, 54p., ADA-310 412, 15 refs.

River ice, Ice breakup, Ice scoring, Flow measurement, Bridges, Piers, Ice solid interface, Impact strength, Hydrography, Sensors, Measuring instruments, Sediment transport, Bottom topography

In Jan. 1990 a bridge over the White River in White River Junction, VT, collapsed during a period of ice breakup. The ultimate failure was attributed to the progressive deterioration of the foundation due to scour. Twenty years of weather and stage data at the site are presented along with a failure scenario. Instrumentation to measure the ice forces on a bridge pier was incorporated into the design of the replacement bridge. Since scour was the primary cause of failure, the new bridge piers have extensive scour protection. A pier for a bridge 2000 feet upstream of the new bridge was instrumented for scour. The objective was to develop real-time scour monitors that would survive ice and debris and allow correlation between the hydrograph and scour activity. Instrumentation and data acquisition packages for both instrumented bridge piers are presented. The results of the first two years of measurements are presented. The bulk of the scour occurred in the initial stages of breakup while the ice sheet was still intact. Apparently to compensate for the fixed ice surface, the mean velocity has to increase as the discharge increases. The faster velocity resulted in more aggressive bed scour. Once the ice sheet broke up and the ice was free floating, the scour activity subsided.

50-6074

Sedimentary petrogenesis and its characteristics in the cryolithozone.

Danilov, I.D., *Moscow University. Geology bulletin,* 1995, 50(3), p.1-8, Translated from Vestnik Moskovskogo Universiteta. Geologiia. 18 refs.

Lithology, Geocryology, Sedimentation, Permafrost mass transfer, Ground ice, Rock properties, Frozen ground mechanics, Diagenesis, Freeze thaw cycles

50-6075

Steering Group for the Global Digital Sea-ice Data Bank. Fourth session. Final report.

Commission for Marine Meteorology, Geneva, World Meteorological Organization, Jan. 1994, 6p. + annexes.

Meetings, Oceanography, Sea ice distribution, Ice surveys, Ice conditions, Mapping, Data processing, International cooperation

50-6076

Clonal diversity and allozyme variation in populations of the arctic sedge *Carex bigelowii* (Cyperaceae).

Jonsson, B.O., Jónsdóttir, I.S., Cronberg, N., *Journal of ecology,* June 1996, 84(3), p.449-459, 59 refs.

Plants (botany), Plant ecology, Tundra vegetation, Grasses, Mosses, Plant tissues, Structural analysis, Sampling

50-6077

Past and present glacial landforms of the central Qilian Shan. [Zum vorzeitlichen glazialen Formenschatz im zentralen Qilian Shan (Tulai Shan)]

Lehmkuhl, F., *Petermanns Geographische Mitteilungen,* 1995, 139(4), p.239-251, In German with English and Russian summaries. 38 refs.

Pleistocene, Geomorphology, Landforms, Glacial geology, Glacier oscillation, Mountain glaciers, Moraines, Quaternary deposits, Snow line, China—Tibet

50-6078

Accumulation rates of carbon in mires in Finland and implications for climate change.

Tolonen, K., Turunen, J., *Holocene,* June 1996, 6(2), p.171-178, 48 refs.

Climatology, Climatic changes, Subarctic landscapes, Peat, Swamps, Organic soils, Distribution, Coring, Stratigraphy, Geochemical cycles, Global warming, Finland

50-6079

Environmental change in eastern Greenland during the last 1300 years: evidence from foraminifera and lithofacies in Nansen Fjord, 68°N.

Jennings, A.E., Weiner, N.J., *Holocene,* June 1996, 6(2), p.179-191, 54 refs.

Climatology, Geochronology, Climatic changes, Marine deposits, Drill core analysis, Radioactive age determination, Sea ice distribution, Ice rafting, Sedimentation, Ocean currents, Periodic variations, Greenland—Nansen Fjord

50-6080

Long-term population dynamics of *Fagus sylvatica* at the northern limits of its distribution in southern Sweden: a palaeoecological study.

Björkman, L., *Holocene,* June 1996, 6(2), p.225-234, 68 refs.

Paleoecology, Forest ecosystems, Trees (plants), Forest lines, Soil profiles, Palynology, Revegetation, Vegetation patterns, Geochronology, Radioactive age determination, Sweden

50-6081

Holocene variations of Ameghino Glacier, southern Patagonia.

Aniya, M., *Holocene,* June 1996, 6(2), p.247-252, 31 refs.

Geochronology, Glacial geology, Glacier oscillation, Glacier surveys, Topographic surveys, Moraines, Geomorphology, Stereomapping, Argentina—Patagonia

50-6082

Observations of 'freezing-induced redistribution' in soil lysimeters.

Butler, A.P., Burne, S., Wheater, H.S., *Hydrological processes,* Mar. 1996, 10(3), p.471-474, 4 refs.

Soil science, Soil profiles, Soil water migration, Water level, Water table, Sensors, Flow control, Pumps, Flow measurement, Soil temperature, Soil freezing, Freeze thaw cycles, Radiant cooling

50-6083

Integrated approach to modelling hydrology and water quality in glacierized catchments.

Richards, K.S., et al, *Hydrological processes,* Apr. 1996, 10(4), p.479-508, 26 refs.

Glacial hydrology, River basins, Hydrogeochemistry, Glacier melting, Snowmelt, Snow cover effect, Subglacial drainage, Hydrography, Runoff, Sediment transport, Mathematical models

50-6084

Effect of snow and firn hydrology on the physical and chemical characteristics of glacial runoff.

Fountain, A.G., *Hydrological processes,* Apr. 1996, 10(4), p.509-521, Refs. p.519-521.

Glacial hydrology, Snow hydrology, Firn, Snowmelt, Water table, Runoff, Ice water interface, Water flow, Flow rate, Diurnal variations, Hydrogeochemistry

50-6085

Isotopic and ionic variations in glacier river water during three contrasting ablation seasons.

Theakstone, W.H., Knudsen, N.T., *Hydrological processes,* Apr. 1996, 10(4), p.523-539, 32 refs.

Glacial hydrology, Glacial rivers, River flow, Snowmelt, Snow composition, Sampling, Hydrogeochemistry, Subglacial drainage, Isotope analysis, Oxygen isotopes, Ion density (concentration), Seasonal variations

50-6086

Hydrochemistry as an indicator of subglacial drainage system structure: a comparison of alpine and sub-polar environments.

Tranter, M., Brown, G.H., Hodson, A.J., Gurnell, A.M., *Hydrological processes,* Apr. 1996, 10(4), p.541-556, 42 refs.

Glacial hydrology, Hydrogeochemistry, Subglacial drainage, Bedrock, Weathering, Meltwater, Runoff, Snow composition, Ion density (concentration), Sampling, Structural analysis

50-6087

Impact of subglacial geothermal activity on meltwater quality in the Jökulsá Á Sólheimasandi system, southern Iceland.

Lawler, D.M., Björnsson, H., Dolan, M., *Hydrological processes,* Apr. 1996, 10(4), p.557-578, 63 refs.

Glacial hydrology, Glacial geology, Subglacial drainage, Glacier melting, Bedrock, Topographic features, Meltwater, Geothermal thawing, Hydrogeochemistry, Geothermometry, Volcanoes, Radio echo soundings, Iceland

50-6088

Experimental investigations of the weathering of suspended sediment by alpine glacial meltwater.

Brown, G.H., Tranter, M., Sharp, M.J., *Hydrological processes,* Apr. 1996, 10(4), p.579-597, 59 refs.

Glacial hydrology, Glacial geology, Hydrogeochemistry, Weathering, Solubility, Ion density (concentration), Suspended sediments, Subglacial drainage, Simulation, Ice solid interface, Bedrock

50-6089

Statistical evaluation of glacier boreholes as indicators of basal drainage systems.

Smart, C.C., *Hydrological processes,* Apr. 1996, 10(4), p.599-613, 22 refs.

Glacial hydrology, Glacier melting, Subglacial drainage, Boreholes, Hydraulics, Water level, Classifications, Statistical analysis

50-6090

***In situ* measurements of basal water quality and pressure as an indicator of the character of subglacial drainage systems.**

Stone, D.B., Clarke, G.K.C., *Hydrological processes,* Apr. 1996, 10(4), p.615-628, 32 refs.

Glacial hydrology, Subglacial drainage, Subglacial observations, Meltwater, Flow measurement, Water pressure, Suspended sediments, Ion density (concentration), Hydrogeochemistry, Turbidity, Electrical resistivity, Sampling

50-6091

Links between proglacial stream suspended sediment dynamics, glacier hydrology and glacier motion at Midtdalsbreen, Norway.

Willis, I.C., Richards, K.S., Sharp, M.J., *Hydrological processes,* Apr. 1996, 10(4), p.629-648, 67 refs.

Glacial hydrology, Subglacial drainage, Meltwater, Hydrogeochemistry, Stream flow, Suspended sediments, Glacier flow, Periodic variations, Ice solid interface, Water pressure, Sampling, Statistical analysis, Norway

50-6092

Towards a hydrological model for computerized ice-sheet simulations.

Alley, R.B., *Hydrological processes,* Apr. 1996, 10(4), p.649-660, 43 refs.

Glacial hydrology, Ice sheets, Glacier flow, Computerized simulation, Mountain glaciers, Subglacial drainage, Hydraulics, Basal sliding, Water pressure, Meltwater, Glacier beds, Ice solid interface

50-6093

Relationship between the boundary of continental seasonal snow cover and air temperature and humidity.

Kislov, A.V., *Russian meteorology and hydrology,* 1994, No.8, p.38-41, Translated from Meteorologiia i gidrologiia. 14 refs.

Climatology, Atmospheric boundary layer, Air temperature, Snow cover distribution, Snow air interface, Snow cover effect, Humidity, Vapor pressure, Seasonal variations, Models

50-6094

Arctic buoys send data around the world. *Wood Hole Oceanographic Institution. Reports on research. Paleoceanography,* 1992, p.20.

Oceanography, Drift stations, Sensors, Data transmission, Telemetering equipment, Oceanographic surveys, Meteorological instruments, Ocean currents, Arctic Ocean

50-6095

Antarctic geography.

Siple, P.A., Antarctica in the International Geophysical Year. Geophysical monograph no.1, Washington, D.C., [American Geophysical Union], 1956, p.13-17, 1 ref.

Geology, Ice sheets, Sea ice, Water temperature

Although currently two-fifths of this five million square-mile continent is yet to be seen for the first time, there is every likelihood that before the IGY draws to a close most of the major geographic discoveries will have been made. Concepts of the Antarctic Continent have gradually improved. The Continent appears to be a 'siamese-like' juncture of two large land masses. The portion lying mostly in the western hemisphere, conveniently designated West Antarctica, is only about half as large as East Antarctica. The latter is believed to be a massive Precambrian shield superimposed by a great dome of snow and ice, and toward its center reaching in excess of 13,000 feet elevation. The smaller West Antarctica is more folded in character and the ice dome near its center is probably less than 10,000 feet high. Where these land masses come in close contact, a high-faulted mountain forms a backbone to the whole continental mass. Between the continental glacial domes and these high mountains, natural troughs tend to channel katabatic surface winds off the Continent. During the forthcoming IGY, glacial and seismic programs will add greatly to the knowledge concerning the thickness of the ice cap and the surface beneath. (Auth. mod.)

50-6096

New high-pressure phase of ice.

Benoit, M., Bernasconi, M., Focher, P., Parrinello, M., *Physical review letters,* Apr. 15, 1996, 76(16), p.2934-2936, 24 refs.

Ice physics, Ice structure, Molecular structure, Hydrogen bonds, Phase transformations, Stability, High pressure ice, Simulation, Extraterrestrial ice

50-6097

Frost durability of high strength concrete: effect of internal cracking on ice formation.

Jacobsen, S., Sellevold, E.J., Matala, S., *Cement and concrete research,* June 1996, 26(6), p.919-931, 17 refs.

Concrete durability, Frost resistance, Frost action, Freeze thaw tests, Absorption, Degradation, Ice formation, Ice solid interface, Cracking (fracturing), Porosity, Cold weather tests, Temperature measurement, Temperature effects

50-6098

Radiocarbon dating of glacial moraines using the aeolian biome: test results at Bishop Creek, Sierra Nevada, California.

Dorn, R.I., *Physical geography,* Mar.-Apr. 1996, 17(2), p.157-179, Refs. p.172-179.

Glacial geology, Paleoecology, Paleoclimatology, Glacial deposits, Eolian soils, Soil dating, Moraines, Radioactive age determination, Icebergs, Glacier oscillation, Correlation, United States—California—Sierra Nevada

50-6099

Living on ice: problems of urban development in Canada's north.

French, H.M., *Geoscience Canada,* Dec. 1994, 21(4), p.163-175, With French summary. 30 refs.

Permafrost distribution, Permafrost beneath structures, Permafrost hydrology, Ground ice, Cold weather construction, Frost heave, Thaw weakening, Countermeasures, Economic development, Municipal engineering, Canada

50-6100

Effect of climate change on hydrologic regime of two climatically different watersheds.

Loukas, A., Quick, M.C., *Journal of hydrologic engineering,* Apr. 1996, 1(2), p.77-87, 43 refs.

Watersheds, Hydrologic cycle, Climatic changes, Hydrography, Runoff, Surface drainage, Snowmelt, Glacier melting, Mathematical models, Simulation

50-6101

County improves its snow and ice control program.

da Cunha, M., *Public works,* Apr. 1996, 127(4), p.28-29.

Winter maintenance, Road maintenance, Road icing, Snow removal, Ice control, Salting, Storage, Cold weather operation, Environmental protection, United States—New York

50-6102

PennDOT responds to the challenges of January's blizzards and flooding.

Chizmar, S., *AASHTO quarterly*, 1996, 75(2), p.7-10.

Road maintenance, Winter maintenance, Snowstorms, Flooding, Snow removal equipment, Cold weather performance, Cost analysis, United States—Pennsylvania

50-6103

Maryland State Highway Administration tallies record winter.

Kassoff, H., *AASHTO quarterly*, 1996, 75(2), p.11-12.

Road maintenance, Winter maintenance, Snow removal, Cold weather operation, United States—Maryland

50-6104

West Siberian oil and the northern sea route: current situation and future potential.

Kriukov, V., Shmat, V., Moe, A., *Polar geography*, July-Sep. 1995, 19(3), p.219-235, 10 refs.

Hydrocarbons, Petroleum industry, Reservoirs, Pipelines, Petroleum transportation, Marine transportation, Route surveys, Economic development, Russia—Siberia, Northern Sea Route

50-6105

Rapid climatic shifts during isotope stages 2-4 in the polar North Atlantic.

Dokken, T.M., Hald, M., *Geology*, July 1996, 24(7), p.599-602, 37 refs.

Paleoclimatology, Climatic changes, Icebergs, Ice breakup, Ice rafting, Marine deposits, Ice cores, Drill core analysis, Ocean currents, Advection, Isotope analysis, Correlation, Atlantic Ocean, Greenland

50-6106

Cold regions infrastructure: an international imperative for the 21st century.

International Conference on Cold Regions Engineering, 8th, Fairbanks, AK, Aug. 12-16, 1996, Carlson, R.F., ed, New York, American Society of Civil Engineers, 1996, 955p., Refs. passim. For individual papers see 50-6106 through 50-6184.

DLC TA713.I55 1996

Cold weather construction, Cold weather operation, Permafrost beneath structures, Permafrost beneath roads, Permafrost preservation, Soil freezing, Frozen ground strength, Soil stabilization, Frost heave, Frost protection, Land reclamation, Road maintenance, Waste disposal, Water treatment

50-6107

Air convection embankments for roadway construction in permafrost zones.

Goering, D.J., International Conference on Cold Regions Engineering, 8th, Fairbanks, AK, Aug. 12-16, 1996. Proceedings. Cold regions infrastructure: an international imperative for the 21st century. Edited by R.F. Carlson, New York, American Society of Civil Engineers, 1996, p.1-12, 9 refs.

DLC TA713.I55 1996

Permafrost beneath roads, Permafrost preservation, Permafrost heat transfer, Soil air interface, Soil stabilization, Road maintenance, Subgrade maintenance, Embankments, Air flow, Convection

50-6108

Performance of a passively refrigerated gravel pad foundation in Fairbanks.

Adamczak, S., Jr., International Conference on Cold Regions Engineering, 8th, Fairbanks, AK, Aug. 12-16, 1996. Proceedings. Cold regions infrastructure: an international imperative for the 21st century. Edited by R.F. Carlson, New York, American Society of Civil Engineers, 1996, p.13-22, 3 refs.

DLC TA713.I55 1996

Permafrost beneath structures, Permafrost preservation, Permafrost heat transfer, Artificial freezing, Soil freezing, Soil stabilization, Foundations, Heat pipes

50-6109

Stress and temperature effects on silt frost heave.

Marandi, S.M., Stewart, D.I., Cousens, T.W., International Conference on Cold Regions Engineering, 8th, Fairbanks, AK, Aug. 12-16, 1996. Proceedings. Cold regions infrastructure: an international imperative for the 21st century. Edited by R.F. Carlson, New York, American Society of Civil Engineers, 1996, p.23-34, 14 refs.

DLC TA713.I55 1996

Soil freezing, Freezing front, Frost penetration, Frost heave, Frost resistance, Frost protection, Soil stabilization, Frozen ground strength, Frozen ground compression

50-6110

Strength sensitivity index for assessing climate warming effects on permafrost.

Ladanyi, B., International Conference on Cold Regions Engineering, 8th, Fairbanks, AK, Aug. 12-16, 1996. Proceedings. Cold regions infrastructure: an international imperative for the 21st century. Edited by R.F. Carlson, New York, American Society of Civil Engineers, 1996, p.35-45, 18 refs.

DLC TA713.I55 1996

Frozen ground strength, Frozen ground thermodynamics, Ground thawing, Frozen ground settling, Soil air interface, Permafrost heat balance, Permafrost forecasting, Mathematical models

50-6111

Surface modifications to reduce thaw degradation of permafrost.

Zarling, J.P., Rajesh, J., International Conference on Cold Regions Engineering, 8th, Fairbanks, AK, Aug. 12-16, 1996. Proceedings. Cold regions infrastructure: an international imperative for the 21st century. Edited by R.F. Carlson, New York, American Society of Civil Engineers, 1996, p.46-59, 13 refs.

DLC TA713.I55 1996

Permafrost beneath roads, Permafrost preservation, Thaw weakening, Artificial freezing, Soil freezing, Soil stabilization, Road maintenance, Snow retention, Rock fills

50-6112

Spray freezing to treat oil sands tailings pond water.

Gao, W., Sego, D.C., Smith, D.W., International Conference on Cold Regions Engineering, 8th, Fairbanks, AK, Aug. 12-16, 1996. Proceedings. Cold regions infrastructure: an international imperative for the 21st century. Edited by R.F. Carlson, New York, American Society of Civil Engineers, 1996, p.60-70, 21 refs.

DLC TA713.I55 1996

Tailings, Water pollution, Soil pollution, Spray freezing, Artificial freezing, Waste treatment, Water treatment, Oil recovery, Land reclamation

50-6113

Interference by natural organics in diesel analyses.

Dworian, P., International Conference on Cold Regions Engineering, 8th, Fairbanks, AK, Aug. 12-16, 1996. Proceedings. Cold regions infrastructure: an international imperative for the 21st century. Edited by R.F. Carlson, New York, American Society of Civil Engineers, 1996, p.71-81, 3 refs.

DLC TA713.I55 1996

Oil spills, Soil pollution, Soil chemistry, Soil composition, Soil tests, Soil analysis

50-6114

Modeling of contaminant transport in groundwater in areas of discontinuous permafrost.

Johnson, R., Kane, D., Hinzman, L., Light, G., Farris, A., International Conference on Cold Regions Engineering, 8th, Fairbanks, AK, Aug. 12-16, 1996. Proceedings. Cold regions infrastructure: an international imperative for the 21st century. Edited by R.F. Carlson, New York, American Society of Civil Engineers, 1996, p.82-93, 14 refs.

DLC TA713.I55 1996

Discontinuous permafrost, Permafrost hydrology, Subpermafrost ground water, Suprapermafrost ground water, Oil spills, Soil pollution, Water pollution, Subsurface drainage, Hydrogeochemistry

50-6115

Petroleum hydrocarbon removal via volatilization and biodegradation at McGrath, Alaska.

Ramert, P.C., Eberhardt, W.L., International Conference on Cold Regions Engineering, 8th, Fairbanks, AK, Aug. 12-16, 1996. Proceedings. Cold regions infrastructure: an international imperative for the 21st century. Edited by R.F. Carlson, New York, American Society of Civil Engineers, 1996, p.94-105, 8 refs.

DLC TA713.I55 1996

Oil spills, Oil recovery, Waste treatment, Soil pollution, Soil microbiology, Soil chemistry, Land reclamation, United States—Alaska—McGrath

50-6116

Pilot-scale study of in situ hydrocarbon remediation of contamination in soil and groundwater at Fort Wainwright, Alaska.

Gould, T.F., Wallace, M., International Conference on Cold Regions Engineering, 8th, Fairbanks, AK, Aug. 12-16, 1996. Proceedings. Cold regions infrastructure: an international imperative for the 21st century. Edited by R.F. Carlson, New York, American Society of Civil Engineers, 1996, p.106-115, 2 refs.

DLC TA713.I55 1996

Oil spills, Oil recovery, Soil pollution, Water pollution, Waste treatment, Soil chemistry, Soil microbiology, Land reclamation, United States—Alaska—Fort Wainwright

50-6117

Vertical migration of diesel into silty sand subject to cyclic freeze-thaw.

Biggar, K.W., Neufeld, J.C.R., International Conference on Cold Regions Engineering, 8th, Fairbanks, AK, Aug. 12-16, 1996. Proceedings. Cold regions infrastructure: an international imperative for the 21st century. Edited by R.F. Carlson, New York, American Society of Civil Engineers, 1996, p.116-127, 9 refs.

DLC TA713.I55 1996

Oil spills, Soil pollution, Water pollution, Frozen ground chemistry, Soil chemistry, Soil freezing, Freezing front, Freeze thaw cycles

50-6118

Minimum thermal protection for cold weather masonry.

Korhonen, C.J., Cortez, E.R., Thomas, R.D., MP 3856, International Conference on Cold Regions Engineering, 8th, Fairbanks, AK, Aug. 12-16, 1996. Proceedings. Cold regions infrastructure: an international imperative for the 21st century. Edited by R.F. Carlson, New York, American Society of Civil Engineers, 1996, p.128-140, 3 refs.

DLC TA713.I55 1996

Cold weather construction, Winter concreting, Concrete freezing, Concrete strength, Concrete admixtures, Masonry, Mortars, Freeze thaw tests, Frost protection, Antifreezes

A study was conducted to assess ways to minimize thermal protection requirements for cold weather masonry construction. Frost damage immunity thresholds in terms of mortar moisture content and maturity were determined. Correlations of moisture content with time were developed for mortar in contact with masonry units. Guidance for when fresh mortar can be allowed to freeze, how quickly water can be withdrawn from fresh mortar by masonry units, and at what water content mortar first becomes immune to frost damage are provided. The effects of temperature and antifreeze admixtures on the strength and durability of mortar were studied.

50-6119

Northern climate weathering tests on sealed concrete.

Chang, L.M., International Conference on Cold Regions Engineering, 8th, Fairbanks, AK, Aug. 12-16, 1996. Proceedings. Cold regions infrastructure: an international imperative for the 21st century. Edited by R.F. Carlson, New York, American Society of Civil Engineers, 1996, p.141-152, 8 refs.

DLC TA713.I55 1996

Concrete slabs, Concrete pavements, Cold weather performance, Freeze thaw tests, Weathering, Corrosion, Sealing, Protective coatings, Weatherproofing

50-6120

Low temperature performance rating criteria for lubrication greases.

Lundberg, J., McFadden, T., International Conference on Cold Regions Engineering, 8th, Fairbanks, AK, Aug. 12-16, 1996. Proceedings. Cold regions infrastructure: an international imperative for the 21st century. Edited by R.F. Carlson, New York, American Society of Civil Engineers, 1996, p.153-172, 3 refs.

DLC TA713.I55 1996

Railroad cars, Railroad equipment, Lubricants, Cold weather performance, Low temperature tests

50-6121

Coating of steel structures in cold regions.

Nakamura, Y., Inaba, T., Tamada, A., International Conference on Cold Regions Engineering, 8th, Fairbanks, AK, Aug. 12-16, 1996. Proceedings. Cold regions infrastructure: an international imperative for the 21st century. Edited by R.F. Carlson, New York, American Society of Civil Engineers, 1996, p.173-184, 2 refs.

DLC TA713.I55 1996

Pipeline supports, Steel structures, Protective coatings, Corrosion, Weatherproofing, Cold weather performance, Low temperature tests, Freeze thaw tests

50-6122

Freeze-thaw durability of concrete cured below 0°C using antifreeze admixtures.

Mason, M.R., Schroeder, H.P., International Conference on Cold Regions Engineering, 8th, Fairbanks, AK, Aug. 12-16, 1996. Proceedings. Cold regions infrastructure: an international imperative for the 21st century. Edited by R.F. Carlson, New York, American Society of Civil Engineers, 1996, p.185-195, 14 refs.

DLC TA713.I55 1996

Concrete freezing, Concrete durability, Concrete strength, Concrete curing, Winter concreting, Concrete admixtures, Antifreezes, Frost protection, Frost resistance, Freeze thaw tests

50-6123

Status of cold regions research: notes from the March 6 & 7, 1994 Workshop at the 7th International Cold Regions Engineering Conference, Edmonton, Alberta.

Kinney, T.C., Carlson, R.F., Thomas, H.P., International Conference on Cold Regions Engineering, 8th, Fairbanks, AK, Aug. 12-16, 1996. Proceedings. Cold regions infrastructure: an international imperative for the 21st century. Edited by R.F. Carlson, New York, American Society of Civil Engineers, 1996, p.196-202.

DLC TA713.I55 1996

Research projects, Organizations, Regional planning, Cold weather construction, Cold weather operation, Meetings

50-6124

Thermal impact of a buried chilled gas pipeline.

Raad, L., Yuan, X.L., Weichert, D., International Conference on Cold Regions Engineering, 8th, Fairbanks, AK, Aug. 12-16, 1996. Proceedings. Cold regions infrastructure: an international imperative for the 21st century. Edited by R.F. Carlson, New York, American Society of Civil Engineers, 1996, p.203-214, 13 refs.

DLC TA713.I55 1996

Gas pipelines, Underground pipelines, Pipeline freezing, Soil freezing, Frozen ground thermodynamics, Frost heave, Freezing front, Frost penetration, Computerized simulation

50-6125

Upheaval buckling of a pipeline in an arctic environment.

Quimby, T.B., Fitzpatrick, M.R., International Conference on Cold Regions Engineering, 8th, Fairbanks, AK, Aug. 12-16, 1996. Proceedings. Cold regions infrastructure: an international imperative for the 21st century. Edited by R.F. Carlson, New York, American Society of Civil Engineers, 1996, p.215-225, 5 refs.

DLC TA713.I55 1996

Gas pipelines, Underground pipelines, Permafrost beneath structures, Thaw weakening, Thermal expansion, Flexural strength, Pipe laying, Thermal insulation, Permafrost preservation, Soil stabilization, United States—Alaska—North Slope

50-6126

Transportation of Alaska North Slope natural gas to market.

Lannom, D.A., Ogbe, D.O., Lawal, A.S., Bennett, F.L., International Conference on Cold Regions Engineering, 8th, Fairbanks, AK, Aug. 12-16, 1996. Proceedings. Cold regions infrastructure: an international imperative for the 21st century. Edited by R.F. Carlson, New York, American Society of Civil Engineers, 1996, p.226-237, 15 refs.

DLC TA713.I55 1996

Gas pipelines, Natural gas, Liquefied gases, Gas production, Petroleum transportation, Route surveys, Tanker ships, Economic development, Cost analysis, United States—Alaska—North Slope

50-6127

Comparison of static and dynamic test results for driven steel pipe piles in highly saline permafrost.

Merrill, K.S., Riker, R.E., International Conference on Cold Regions Engineering, 8th, Fairbanks, AK, Aug. 12-16, 1996. Proceedings. Cold regions infrastructure: an international imperative for the 21st century. Edited by R.F. Carlson, New York, American Society of Civil Engineers, 1996, p.238-253, 8 refs.

DLC TA713.I55 1996

Buildings, Foundations, Steel structures, Piles, Pile driving, Pile load tests, Saline soils, Frozen ground strength, Permafrost beneath structures, Permafrost preservation, Soil stabilization, United States—Alaska—Barrow

50-6128

Driven pile capacities in warm permafrost in Komi Republic, Russia.

Thompson, S.R., Tart, R.G., Jr., International Conference on Cold Regions Engineering, 8th, Fairbanks, AK, Aug. 12-16, 1996. Proceedings. Cold regions infrastructure: an international imperative for the 21st century. Edited by R.F. Carlson, New York, American Society of Civil Engineers, 1996, p.254-265.

DLC TA713.I55 1996

Foundations, Steel structures, Piles, Pile load tests, Permafrost beneath structures, Frozen ground strength, Russia—Komi

50-6129

Research program for reducing frost heave with geosynthetic capillary barriers.

Henry, K.S., Ellis, E., MP 3857, International Conference on Cold Regions Engineering, 8th, Fairbanks, AK, Aug. 12-16, 1996. Proceedings. Cold regions infrastructure: an international imperative for the 21st century. Edited by R.F. Carlson, New York, American Society of Civil Engineers, 1996, p.266-277, 19 refs.

DLC TA713.I55 1996

Pavements, Embankments, Subgrade soils, Soil water migration, Capillarity, Frost heave, Frost protection, Geotextiles, Vapor barriers, Waterproofing, Soil stabilization

A research project co-sponsored by the U.S. Army Corps of Engineers, the Alaska Science and Technology Foundation, and the Alaska Department of Transportation and Public Facilities to develop design criteria for geosynthetic capillary barriers is being conducted at the U.S. Army Cold Regions Research and Engineering Laboratory. The successful use of geosynthetic capillary barriers would allow the use of a greater volume of frost-susceptible soil in roadway and airport embankments, while achieving the same or better pavement performance, resulting in great cost savings. The results of past work with granular capillary barriers in pavements to reduce frost heave provide preliminary guidance for using geosynthetic capillary barriers. This paper describes the experimental program to help define conditions under which geosynthetic capillary barriers will be effective. The primary variables being examined are geotextile pore size distribution and thickness, as well as rate of heat loss during freezing of soils. The response being measured is rate of frost heave. The selection process for candidate materials includes capillary rise testing and the application of geotextile filtration criteria.

50-6130

Foundation retrofit at Savoonga: "A retrospective study".

Crowther, G.S., International Conference on Cold Regions Engineering, 8th, Fairbanks, AK, Aug. 12-16, 1996. Proceedings. Cold regions infrastructure: an international imperative for the 21st century. Edited by R.F. Carlson, New York, American Society of Civil Engineers, 1996, p.278-290, 4 refs.

DLC TA713.I55 1996

Buildings, Foundations, Footings, Permafrost beneath structures, Permafrost preservation, Earth fills, Thermal insulation, Soil stabilization, United States—Alaska—Saint Lawrence Island

50-6131

Performance of a Triodetic foundation near Fairbanks, Alaska.

Kinney, T.C., International Conference on Cold Regions Engineering, 8th, Fairbanks, AK, Aug. 12-16, 1996. Proceedings. Cold regions infrastructure: an international imperative for the 21st century. Edited by R.F. Carlson, New York, American Society of Civil Engineers, 1996, p.291-302, 2 refs.

DLC TA713.I55 1996

Houses, Foundations, Permafrost beneath structures, Permafrost control, Frozen ground settling, Settlement (structural), Cold weather construction, United States—Alaska—Fairbanks

50-6132

Foundations for permafrost and other problem soils.

Vangool, W.J., International Conference on Cold Regions Engineering, 8th, Fairbanks, AK, Aug. 12-16, 1996. Proceedings. Cold regions infrastructure: an international imperative for the 21st century. Edited by R.F. Carlson, New York, American Society of Civil Engineers, 1996, p.303-324, 4 refs.

DLC TA713.I55 1996

Buildings, Foundations, Permafrost beneath structures, Permafrost control, Frozen ground settling, Settlement (structural), Cold weather construction

50-6133

West Dock Causeway bridge piers.

Christopherson, A.B., Nottingham, T., Pickering, J.W., Braun, K.W., International Conference on Cold Regions Engineering, 8th, Fairbanks, AK, Aug. 12-16, 1996. Proceedings. Cold regions infrastructure: an international imperative for the 21st century. Edited by R.F. Carlson, New York, American Society of Civil Engineers, 1996, p.315-326, 5 refs.

DLC TA713.I55 1996

Bridges, Piles, Piers, Subsea permafrost, Permafrost beneath structures, Pile load tests, Ice loads, Ice control, United States—Alaska—Prudhoe Bay

50-6134

Disposal of drilling wastes in permafrost, Prudhoe Bay, Alaska.

Hansen, P., Snyder, M., Wangstrom, P., International Conference on Cold Regions Engineering, 8th, Fairbanks, AK, Aug. 12-16, 1996. Proceedings. Cold regions infrastructure: an international imperative for the 21st century. Edited by R.F. Carlson, New York, American Society of Civil Engineers, 1996, p.327-338.

DLC TA713.I55 1996

Drilling fluids, Waste disposal, Permafrost preservation, Tundra soils, Environmental protection, Blasting, Excavation, Underground storage, United States—Alaska—Prudhoe Bay, United States—Alaska—North Slope

50-6135

Oxygen supplies for bioremediation in tundra soils.

White, D.M., Irvine, R.L., International Conference on Cold Regions Engineering, 8th, Fairbanks, AK, Aug. 12-16, 1996. Proceedings. Cold regions infrastructure: an international imperative for the 21st century. Edited by R.F. Carlson, New York, American Society of Civil Engineers, 1996, p.339-350, 12 refs.

DLC TA713.I55 1996

Tundra soils, Soil pollution, Soil chemistry, Soil microbiology, Waste disposal, Land reclamation

50-6136

Innovative bioventing system construction/operation in cold regions.

Stricklan, K.K., Mattzela, R.L., International Conference on Cold Regions Engineering, 8th, Fairbanks, AK, Aug. 12-16, 1996. Proceedings. Cold regions infrastructure: an international imperative for the 21st century. Edited by R.F. Carlson, New York, American Society of Civil Engineers, 1996, p.351-359, 4 refs.

DLC TA713.I55 1996

Oil spills, Soil pollution, Soil chemistry, Soil microbiology, Waste treatment, Land reclamation, Cold weather operation, Military facilities, United States—Alaska—Elmendorf Air Force Base, United States—Alaska—Eielson Air Force Base

50-6137

Risk assessment of vapors in cold regions.

Perkins, R.A., International Conference on Cold Regions Engineering, 8th, Fairbanks, AK, Aug. 12-16, 1996. Proceedings. Cold regions infrastructure: an international imperative for the 21st century. Edited by R.F. Carlson, New York, American Society of Civil Engineers, 1996, p.360-371, 21 refs.

DLC TA713.I55 1996

Air pollution, Physiological effects, Health, Acclimatization, Cold exposure, Cold tolerance

50-6138

Moisture conditions and control in buildings in Fairbanks, Alaska.

Adkins, R., International Conference on Cold Regions Engineering, 8th, Fairbanks, AK, Aug. 12-16, 1996. Proceedings. Cold regions infrastructure: an international imperative for the 21st century. Edited by R.F. Carlson, New York, American Society of Civil Engineers, 1996, p.372-383.

DLC TA713.I55 1996

Buildings, Indoor climates, Climate control, Humidity, Vapor barriers, Ventilation, Human factors engineering, United States—Alaska—Fairbanks

50-6139

Thermal and vapor performance of insulated assemblies.

Carlson, A.R., International Conference on Cold Regions Engineering, 8th, Fairbanks, AK, Aug. 12-16, 1996. Proceedings. Cold regions infrastructure: an international imperative for the 21st century. Edited by R.F. Carlson, New York, American Society of Civil Engineers, 1996, p.384-397, 6 refs.

DLC TA713.I55 1996

Buildings, Vapor barriers, Thermal insulation, Ventilation, Cold weather construction

50-6140

Snow guards for metal roofs.

Tobiasson, W., Buska, J., Greatorex, A., MP 3858, International Conference on Cold Regions Engineering, 8th, Fairbanks, AK, Aug. 12-16, 1996. Proceedings. Cold regions infrastructure: an international imperative for the 21st century. Edited by R.F. Carlson, New York, American Society of Civil Engineers, 1996, p.398-409, 6 refs.

DLC TA713.I55 1996

Roofs, Snow loads, Snow slides, Snow retention, Snow stabilization, Cold weather construction

Sliding snow and ice can damage property, kill people and overload lower roofs. In valleys, moving snow can roll the standing seams onto their side, violating the waterproofing seals within them. Snow guards are used to hold snow on roofs. Some are attached mechanically while others are adhered to the metal roofing. One of the more successful adhesives requires weeks of above-freezing weather to cure properly and thus cannot be installed successfully during the colder portion of the year. Normal "hardware store" silicone adhesive that was tried did not last long. Special, expensive "neutral curing" silicone was moderately successful as a snow guard adhesive. Plastic and aluminum angle snow guards with a peel-and-stick butyl tape did not survive even one mild winter. Set screws are used to attach several commercially available snow guards to the standing seams of metal roofing. They fit some seams well, others poorly. Self-tapping and self-drilling screws have been used with some success when installed with care. Stainless steel structural blind rivets performed well for two winters, but pulled out the third winter when heavier snow loads were present on the roofs. Some damage to snow guards appears to be caused by workers using them for support when moving about on the roof. Improved design guidelines, standards and performance criteria are needed for snow guards on metal roofs.

50-6141

Cold weather testing of outdoor gas-fired heaters.

Das, D.K., International Conference on Cold Regions Engineering, 8th, Fairbanks, AK, Aug. 12-16, 1996. Proceedings. Cold regions infrastructure: an international imperative for the 21st century. Edited by R.F. Carlson, New York, American Society of Civil Engineers, 1996, p.410-423, 7 refs.

DLC TA713.I55 1996

Heating, Engine starters, Fuels, Cold weather tests

50-6142

Utilities and systems for the new U.S. South Pole Station, Amundsen-Scott Station, Antarctica.

Theno, S., Armstrong, D., International Conference on Cold Regions Engineering, 8th, Fairbanks, AK, Aug. 12-16, 1996. Proceedings. Cold regions infrastructure: an international imperative for the 21st century. Edited by R.F. Carlson, New York, American Society of Civil Engineers, 1996, p.424-435, 5 refs.

DLC TA713.I55 1996

Stations, Cold weather construction, Utilities, Water supply, Electric power, Heating, Ventilation, Antarctica—Amundsen-Scott Station

The U.S. has occupied the geographic South Pole continuously since 1956 with Amundsen-Scott Station. The planning and design for a third generation station is currently under way. This paper reviews the primary utility systems serving the existing facilities and discusses the systems proposed for the new station.

50-6143

Cold-related electric power system considerations.

Aspnes, J., Cote, J., International Conference on Cold Regions Engineering, 8th, Fairbanks, AK, Aug. 12-16, 1996. Proceedings. Cold regions infrastructure: an international imperative for the 21st century. Edited by R.F. Carlson, New York, American Society of Civil Engineers, 1996, p.436-446, 9 refs.

DLC TA713.I55 1996

Electric power, Electric equipment, Cold weather operation, Regional planning

50-6144

Iron(II) amine complex soil stabilization.

Hemstreet, D.A., Vinson, T.S., International Conference on Cold Regions Engineering, 8th, Fairbanks, AK, Aug. 12-16, 1996. Proceedings. Cold regions infrastructure: an international imperative for the 21st century. Edited by R.F. Carlson, New York, American Society of Civil Engineers, 1996, p.447-458, 18 refs.

DLC TA713.I55 1996

Subgrade soils, Soil freezing, Frost heave, Thaw weakening, Frost protection, Soil stabilization, Antifreezes, Subgrade maintenance, Road maintenance

50-6145

CPT in cold regions engineering: a logging and design tool.

Fortier, R., Ladanyi, B., Allard, M., International Conference on Cold Regions Engineering, 8th, Fairbanks, AK, Aug. 12-16, 1996. Proceedings. Cold regions infrastructure: an international imperative for the 21st century. Edited by R.F. Carlson, New York, American Society of Civil Engineers, 1996, p.459-470, 11 refs.

DLC TA713.I55 1996

Permafrost surveys, Permafrost depth, Permafrost structure, Frozen ground strength, Frozen ground compression, Soil creep, Penetration tests, Canada—Quebec—Kangiqsualujjuaq

50-6146

Soil thermal properties for the design of underground structures in cold regions.

Steinmanis, J.E., Parmar, D., Radhakrishna, H.S., Judge, A.S., International Conference on Cold Regions Engineering, 8th, Fairbanks, AK, Aug. 12-16, 1996. Proceedings. Cold regions infrastructure: an international imperative for the 21st century. Edited by R.F. Carlson, New York, American Society of Civil Engineers, 1996, p.471-482, 12 refs.

DLC TA713.I55 1996

Soil surveys, Soil classification, Frozen ground thermodynamics, Frozen ground strength, Thermal conductivity, Underground facilities, Subsurface structures, Computerized simulation

50-6147

Behavior of a sand in frozen and unfrozen states.

Swan, C.W., International Conference on Cold Regions Engineering, 8th, Fairbanks, AK, Aug. 12-16, 1996. Proceedings. Cold regions infrastructure: an international imperative for the 21st century. Edited by R.F. Carlson, New York, American Society of Civil Engineers, 1996, p.483-493, 12 refs.

DLC TA713.I55 1996

Frozen ground strength, Frozen ground compression, Sands, Soil freezing, Soil creep, Soil tests, Strain tests

50-6148

Occurrence and significance of *Cryptosporidium parvum* and *Giardia lamblia* in surface waters on Alaska's North Slope.

Pollen, M.R., Christian, C.L., Nordgren, C.D., Pollen, J.D., International Conference on Cold Regions Engineering, 8th, Fairbanks, AK, Aug. 12-16, 1996. Proceedings. Cold regions infrastructure: an international imperative for the 21st century. Edited by R.F. Carlson, New York, American Society of Civil Engineers, 1996, p.494-505, 6 refs.

DLC TA713.I55 1996

Water supply, Water pollution, Water treatment, Microbiology, Health, Sanitary engineering, United States—Alaska—North Slope

50-6149

Wastewater treatment facility aeration project.

Eddy, G.L., International Conference on Cold Regions Engineering, 8th, Fairbanks, AK, Aug. 12-16, 1996. Proceedings. Cold regions infrastructure: an international imperative for the 21st century. Edited by R.F. Carlson, New York, American Society of Civil Engineers, 1996, p.506-517, 3 refs.

DLC TA713.I55 1996

Water treatment, Waste treatment, Sewage treatment, Aeration, Sanitary engineering, Cost analysis, United States—Alaska—Nome

50-6150

Case history of a lined wastewater treatment lagoon failure.

Merrill, K.S., Stephl, M., International Conference on Cold Regions Engineering, 8th, Fairbanks, AK, Aug. 12-16, 1996. Proceedings. Cold regions infrastructure: an international imperative for the 21st century. Edited by R.F. Carlson, New York, American Society of Civil Engineers, 1996, p.518-532.

DLC TA713.I55 1996

Water treatment, Waste treatment, Sewage treatment, Sanitary engineering, Cold weather construction, Ice control, Ponds, Linings, Accidents, United States—Alaska

50-6151

Cold temperature nutrient removal from wastewater.

Oleszkiewicz, J.A., Danesh, S., International Conference on Cold Regions Engineering, 8th, Fairbanks, AK, Aug. 12-16, 1996. Proceedings. Cold regions infrastructure: an international imperative for the 21st century. Edited by R.F. Carlson, New York, American Society of Civil Engineers, 1996, p.533-544, 21 refs.

DLC TA713.I55 1996

Water treatment, Waste treatment, Sewage treatment, Nutrient cycle, Cold weather operation

50-6152

Remote monitoring and technical support for drinking water systems in remote communities.

Smith, D.W., Stanley, S.J., Prince, D.S., International Conference on Cold Regions Engineering, 8th, Fairbanks, AK, Aug. 12-16, 1996. Proceedings. Cold regions infrastructure: an international imperative for the 21st century. Edited by R.F. Carlson, New York, American Society of Civil Engineers, 1996, p.545-557, 6 refs.

DLC TA713.I55 1996

Water supply, Water pollution, Water treatment, Water chemistry, Sanitary engineering, Canada—Alberta

50-6153

Demonstrating brine water wells and toilets for Deering, Alaska.

Lundell, R.H., International Conference on Cold Regions Engineering, 8th, Fairbanks, AK, Aug. 12-16, 1996. Proceedings. Cold regions infrastructure: an international imperative for the 21st century. Edited by R.F. Carlson, New York, American Society of Civil Engineers, 1996, p.558-569, 3 refs.

DLC TA713.I55 1996

Permafrost hydrology, Subpermafrost ground water, Water supply, Brines, Wells, Sanitary engineering, Sewage disposal, Utilities, Cost analysis, United States—Alaska—Deering

50-6154

Drinking water quality in small northern communities.

Smith, D.W., Stanley, S.J., Prince, D.S., International Conference on Cold Regions Engineering, 8th, Fairbanks, AK, Aug. 12-16, 1996. Proceedings. Cold regions infrastructure: an international imperative for the 21st century. Edited by R.F. Carlson, New York, American Society of Civil Engineers, 1996, p.570-581, 9 refs.

DLC TA713.I55 1996

Water supply, Water pollution, Water treatment, Water chemistry, Utilities, Health, Canada—Alberta

50-6155

Three-dimensional simulation of river ice jams.

Hopkins, M.A., Daly, S.F., Lever, J.H., MP 3859, International Conference on Cold Regions Engineering, 8th, Fairbanks, AK, Aug. 12-16, 1996. Proceedings. Cold regions infrastructure: an international imperative for the 21st century. Edited by R.F. Carlson, New York, American Society of Civil Engineers, 1996, p.582-593, 17 refs.

DLC TA713.I55 1996

River ice, Ice breakup, Ice jams, Ice pileup, Ice loads, Ice forecasting, Ice control, Ice water interface, River flow, Hydraulic structures, Flood control, Computerized simulation, Mathematical models

A three-dimensional discrete element model coupled with a one-dimensional depth-averaged unsteady hydraulic model is used to simulate river ice jam formation. Ice runs are arrested by an ice control structure consisting of cylinders spaced across a channel. This type of structure is typically constructed in small, relatively steep rivers to cause temporary ice jams in areas where flooding is not a problem, to protect downstream areas where recurrent flooding is a serious problem. The three-dimensional discrete element simulation consists of several thousand floes. Each flow is a flat circular disk with arbitrary diameter and thickness. Feedback between ice floes and water is through water drag on floes and partial blockage of the channel by floes. The simulations begin by releasing a large concentration of ice floes upstream of the structure at the flow velocity. As the ice floes move downstream, collisions between neighboring floes and collisions between floes and the channel bottom and ice control structure are explicitly modeled. An ice jam is initiated by arching of floes between the control structures. The momentum of colliding floes and water drag cause the jam to thicken. The arrival of additional ice causes the jam to progress upstream. Concurrently, the ice forces on the structure are determined.

50-6156

Dynamics of river ice jam release.

Shen, H.T., Lu, S.N., MP 3860, International Conference on Cold Regions Engineering, 8th, Fairbanks, AK, Aug. 12-16, 1996. Proceedings. Cold regions infrastructure: an international imperative for the 21st century. Edited by R.F. Carlson, New York, American Society of Civil Engineers, 1996, p.594-605, 11 refs. Supported by the U.S. Army Cold Regions Research and Engineering Laboratory under Contract No.DACA89-94-K0017.

DLC TA713.I55 1996

River ice, Ice breakup, Ice jams, Ice forecasting, Ice cover effect, Ice water interface, River flow, Flood forecasting, Hydrodynamics, Mathematical models

Field observations have indicated the probability of violent ice runs with extremely high water velocities and rapid water level rises following the release of major ice jams. A complete quantitative description of such an event does not exist due to the difficulties in collecting data on water and ice movements in the field. In this paper, an analytical formulation for ice jam release is presented. A two-dimensional numerical model is developed and used to provide a better understanding on the dynamics of ice jam release.

50-6157

Evaluation of flow resistance in ice-covered channels.

Braileanu, F., Ettema, R., Wuebben, J., MP 3861, International Conference on Cold Regions Engineering, 8th, Fairbanks, AK, Aug. 12-16, 1996. Proceedings. Cold regions infrastructure: an international imperative for the 21st century. Edited by R.F. Carlson, New York, American Society of Civil Engineers, 1996, p.606-616, 13 refs.

DLC TA713.I55 1996

Channels (waterways), River ice, Ice cover effect, Ice bottom surface, Ice water interface, Turbulent boundary layer, River flow, Mathematical models

Considerable debate surrounds the evaluation of boundary roughness, and hence flow resistance, in ice-covered channels. The debate revolves around how to characterize and combine the influences on flow resistance of bed and ice-cover roughnesses. The highly variable nature of boundary roughness and the empirical framework of all resistance relationships amplify the debate. The present paper addresses the debate and suggests it is time to move on from the customary use resistance equations (for example, the Sabaneev equation) based on Manning coefficients.

50-6158

New, low-cost ice control structure. Part 1: concept development.

Lever, J.H., Gooch, G., Tuthill, A.M., MP 3862, International Conference on Cold Regions Engineering, 8th, Fairbanks, AK, Aug. 12-16, 1996. Proceedings. Cold regions infrastructure: an international imperative for the 21st century. Edited by R.F. Carlson, New York, American Society of Civil Engineers, 1996, p. 617-628, 13 refs.

DLC TA713.I55 1996

River ice, Ice breakup, Ice jams, Ice control, Hydraulic structures, Rock fills, Spillways, Flood control, Cost analysis

Communities located on small, northern rivers can experience severe breakup ice jams. While flood damages may be significant locally, they are often too low to justify conventional flood-control structures. Environmental concerns also tend to render these structures unattractive. The authors have developed a new, low-cost structure to control breakup ice jams on small rivers. It consists of massive sloped blocks, partially buried in riprap, placed across the river adjacent to a natural floodplain. The blocks will arrest a breakup ice run and form a stable, partially grounded ice jam. Trees or boulders on the floodplain retain ice pieces in the river channel while allowing flow to bypass the structure. Large gaps between blocks allow easy fish and canoe passage. Part 1 of this paper describes the development of this concept, and Part 2 describes its full-scale performance.

50-6159

New, low-cost ice control structure. Part 2: construction and performance.

Lever, J.H., Gooch, G., Clark, C., MP 3863, International Conference on Cold Regions Engineering, 8th, Fairbanks, AK, Aug. 12-16, 1996. Proceedings. Cold regions infrastructure: an international imperative for the 21st century. Edited by R.F. Carlson, New York, American Society of Civil Engineers, 1996, p. 629-639, 6 refs.

DLC TA713.I55 1996

River ice, Ice breakup, Ice jams, Ice control, Hydraulic structures, Rock fills, Spillways, Flood control, Cost analysis, United States—Vermont

Hardwick, VT, on the Lamoille River, has experienced 10 ice-jam floods in the past 30 years, yet damages are insufficient to justify conventional flood-control measures. The authors constructed a new ice-control structure (ICS) in Hardwick, in partnership with the Town and the Federal Emergency Management Agency, to assess its potential to control breakup ice jams. It consists of four massive, slope-faced granite blocks, spaced across a 27-m wide river section adjacent to a treed floodplain, and cost $100,000, exclusive of land and design costs. The authors instrumented the site with pressue transducers and a video camera to record the performance of the new structure. The ICS experienced two mild breakup events during ts first year of operation and held an ice jam for several hours during the more severe one. No flooding occurred downstream during these events. The field performance of the structure was similar to hydraulic model results for cases of thin, weak ice.

50-6160

Shakwak Highway Project—construction challenges.

Walsh, R., MacLeod, D.R., Cook, D., International Conference on Cold Regions Engineering, 8th, Fairbanks, AK, Aug. 12-16, 1996. Proceedings. Cold regions infrastructure: an international imperative for the 21st century. Edited by R.F. Carlson, New York, American Society of Civil Engineers, 1996, p.640-651, 12 refs.

DLC TA713.I55 1996

Permafrost beneath roads, Permafrost preservation, Subgrade soils, Embankments, Soil stabilization, Road maintenance, Highway planning, Canada—Yukon Territory

50-6161

Field observations of instrumented highway sections with different frost protections.

Konrad, J.M., Dore, G., Roy, M., International Conference on Cold Regions Engineering, 8th, Fairbanks, AK, Aug. 12-16, 1996. Proceedings. Cold regions infrastructure: an international imperative for the 21st century. Edited by R.F. Carlson, New York, American Society of Civil Engineers, 1996, p.652-663, 5 refs.

DLC TA713.I55 1996

Subgrade soils, Frost action, Frost heave, Frost protection, Thermal insulation, Soil stabilization, Road maintenance, Canada—Quebec

50-6162

Vehicle traction performance comparison for Alaska winter seasons.

Lu, J.J., International Conference on Cold Regions Engineering, 8th, Fairbanks, AK, Aug. 12-16, 1996. Proceedings. Cold regions infrastructure: an international imperative for the 21st century. Edited by R.F. Carlson, New York, American Society of Civil Engineers, 1996, p.664-675, 7 refs.

DLC TA713.I55 1996

Road icing, Rubber ice friction, Tires, Traction, Skid resistance

50-6163

Studded tire research in Norway, Finland and Sweden.

Johnson, E., Barter, T., Sterley, D., International Conference on Cold Regions Engineering, 8th, Fairbanks, AK, Aug. 12-16, 1996. Proceedings. Cold regions infrastructure: an international imperative for the 21st century. Edited by R.F. Carlson, New York, American Society of Civil Engineers, 1996, p.676-687, 11 refs.

DLC TA713.I55 1996

Tires, Pavements, Road maintenance, Safety, Highway planning

50-6164

Strengthening railroad roadbed bases constructed on icy permafrost soils.

Kondrat'ev, V.G., International Conference on Cold Regions Engineering, 8th, Fairbanks, AK, Aug. 12-16, 1996. Proceedings. Cold regions infrastructure: an international imperative for the 21st century. Edited by R.F. Carlson, New York, American Society of Civil Engineers, 1996, p.688-699, 12 refs.

DLC TA713.I55 1996

Railroads, Roadbeds, Permafrost beneath roads, Permafrost preservation, Embankments, Subgrade soils, Soil stabilization, Subgrade maintenance, Road maintenance

50-6165

Permafrost formation and aggradation in a 23-m high homogeneous dyke: a case study.

Konrad, J.M., Ladet, R., International Conference on Cold Regions Engineering, 8th, Fairbanks, AK, Aug. 12-16, 1996. Proceedings. Cold regions infrastructure: an international imperative for the 21st century. Edited by R.F. Carlson, New York, American Society of Civil Engineers, 1996, p.700-711, 3 refs.

DLC TA713.I55 1996

Reservoirs, Embankments, Earth dams, Earth fills, Permafrost surveys, Permafrost indicators, Permafrost origin, Permafrost thermal properties, Permafrost forecasting, Solifluction, Canada—Quebec—Caniapiscau

50-6166

Geotechnical study and remediation design for coal mine spoil instability in discontinuous permafrost—a case study.

Hardy, A.J., Corser, P.G., Graham, D.C., International Conference on Cold Regions Engineering, 8th, Fairbanks, AK, Aug. 12-16, 1996. Proceedings. Cold regions infrastructure: an international imperative for the 21st century. Edited by R.F. Carlson, New York, American Society of Civil Engineers, 1996, p.712-723, 16 refs.

DLC TA713.I55 1996

Coal, Mining, Tailings, Discontinuous permafrost, Permafrost preservation, Permafrost control, Slope stability, Soil stabilization, Land reclamation, United States—Alaska—Usibelli

50-6167

Full-scale test studies on prevention of frost damage for retaining wall reinforced with geotextile.

Chen, L., Li, G.X., Huang, W.F., International Conference on Cold Regions Engineering, 8th, Fairbanks, AK, Aug. 12-16, 1996. Proceedings. Cold regions infrastructure: an international imperative for the 21st century. Edited by R.F. Carlson, New York, American Society of Civil Engineers, 1996, p.724-735, 5 refs.

DLC TA713.I55 1996

Irrigation, Channels (waterways), Linings, Concrete slabs, Earth fills, Frozen ground strength, Frost heave, Frost protection, Soil stabilization, Geotextiles, China—Inner Mongolia

50-6168

Dam construction in northern environment: a numerical study.

Shen, M., Konrad, J.M., International Conference on Cold Regions Engineering, 8th, Fairbanks, AK, Aug. 12-16, 1996. Proceedings. Cold regions infrastructure: an international imperative for the 21st century. Edited by R.F. Carlson, New York, American Society of Civil Engineers, 1996, p.736-744, 7 refs.

DLC TA713.I55 1996

Earth dams, Earth fills, Soil freezing, Artificial freezing, Soil stabilization, Frozen ground strength, Permafrost beneath structures, Permafrost preservation

50-6169

Predicting the level of frost penetration into landfill covers.

Moo-Young, H.K., Jr., Zimmie, T.F., Morgan, M.H., III, International Conference on Cold Regions Engineering, 8th, Fairbanks, AK, Aug. 12-16, 1996. Proceedings. Cold regions infrastructure: an international imperative for the 21st century. Edited by R.F. Carlson, New York, American Society of Civil Engineers, 1996, p.745-756, 26 refs.

DLC TA713.I55 1996

Waste disposal, Earth fills, Linings, Sludges, Land reclamation, Soil freezing, Frost penetration, Frost forecasting

50-6170

Incorporation and rejection of alum sludge flocs by an advancing freezing front.

Parker, P.J., Collins, A.G., Dempsey, J.P., International Conference on Cold Regions Engineering, 8th, Fairbanks, AK, Aug. 12-16, 1996. Proceedings. Cold regions infrastructure: an international imperative for the 21st century. Edited by R.F. Carlson, New York, American Society of Civil Engineers, 1996, p.757-768, 16 refs.

DLC TA713.I55 1996

Sludges, Waste treatment, Water treatment, Artificial freezing, Freezing front, Ice water interface

50-6171

Solid waste management in rural Alaska.

Hansen, H.M., Thomas, H.P., International Conference on Cold Regions Engineering, 8th, Fairbanks, AK, Aug. 12-16, 1996. Proceedings. Cold regions infrastructure: an international imperative for the 21st century. Edited by R.F. Carlson, New York, American Society of Civil Engineers, 1996, p.769-779, 6 refs.

DLC TA713.I55 1996

Waste disposal, Regional planning, Legislation, Cost analysis, United States—Alaska

50-6172

Municipal solid waste characterization in a cold remote region.

Ogbe, A.A., Behr-Andres, C., International Conference on Cold Regions Engineering, 8th, Fairbanks, AK, Aug. 12-16, 1996. Proceedings. Cold regions infrastructure: an international imperative for the 21st century. Edited by R.F. Carlson, New York, American Society of Civil Engineers, 1996, p.780-791, 17 refs.

DLC TA713.I55 1996

Waste disposal, Regional planning, Urban planning, Environmental protection, Cold weather operation, United States—Alaska—Fairbanks

50-6173

Automobile emissions under arctic conditions using unleaded and 10 percent ethanol admixed gasolines.

Andres, R.J., Goldbach, J.D., Williams, F.L., International Conference on Cold Regions Engineering, 8th, Fairbanks, AK, Aug. 12-16, 1996. Proceedings. Cold regions infrastructure: an international imperative for the 21st century. Edited by R.F. Carlson, New York, American Society of Civil Engineers, 1996, p.792-803, 3 refs.

DLC TA713.I55 1996

Motor vehicles, Fuels, Air pollution, Cold weather tests

50-6174

Air quality at a zinc/lead mine in arctic Alaska.

MacCay, C., Coutts, J., International Conference on Cold Regions Engineering, 8th, Fairbanks, AK, Aug. 12-16, 1996. Proceedings. Cold regions infrastructure: an international imperative for the 21st century. Edited by R.F. Carlson, New York, American Society of Civil Engineers, 1996, p.804-815.

DLC TA713.I55 1996

Mining, Air pollution, Dust, Cold weather operation, Health, Environmental protection, United States—Alaska—De Long Mountains

50-6175

Life cycle cost analysis of a Storburn propane combustion toilet.

Ritz, P., Schroeder, H.P., International Conference on Cold Regions Engineering, 8th, Fairbanks, AK, Aug. 12-16, 1996. Proceedings. Cold regions infrastructure: an international imperative for the 21st century. Edited by R.F. Carlson, New York, American Society of Civil Engineers, 1996, p.816-827, 7 refs.

DLC TA713.I55 1996

Waste disposal, Sewage disposal, Sanitary engineering, Health, Cost analysis, United States—Alaska

50-6176

Unified viscoplastic model for the inelastic behavior of ice.

Lee, J.H., Aubertin, M., International Conference on Cold Regions Engineering, 8th, Fairbanks, AK, Aug. 12-16, 1996. Proceedings. Cold regions infrastructure: an international imperative for the 21st century. Edited by R.F. Carlson, New York, American Society of Civil Engineers, 1996, p.828-836, 13 refs.

DLC TA713.I55 1996

Ice mechanics, Ice strength, Ice plasticity, Ice elasticity, Ice deformation, Ice creep, Ice models, Mathematical models

50-6177

Using spaceborne imaging radar to identify lake water resources on the Alaskan North Slope.

Jeffries, M.O., Morris, K., Liston, G.E., International Conference on Cold Regions Engineering, 8th, Fairbanks, AK, Aug. 12-16, 1996. Proceedings. Cold regions infrastructure: an international imperative for the 21st century. Edited by R.F. Carlson, New York, American Society of Civil Engineers, 1996, p.855-865, 11 refs.

DLC TA713.I55 1996

Frozen lakes, Lake ice, Ice surveys, Ice cover thickness, Ice growth, Ice water interface, Lake water, Water level, Water reserves, Synthetic aperture radar, Radio echo soundings, Spaceborne photography, United States—Alaska—North Slope

50-6178

Design and construction for asphalt pavements in permafrost areas: case study of Qinghai-Tibet Highway.

Li, N.Y., Haas, R., International Conference on Cold Regions Engineering, 8th, Fairbanks, AK, Aug. 12-16, 1996. Proceedings. Cold regions infrastructure: an international imperative for the 21st century. Edited by R.F. Carlson, New York, American Society of Civil Engineers, 1996, p.866-877, 6 refs.

DLC TA713.I55 1996

Permafrost beneath roads, Permafrost preservation, Permafrost control, Pavements, Frost resistance, Frost protection, Road maintenance, Highway planning, China—Qinghai-Xizang Plateau

50-6179

Open graded base to reduce thaw weakening in flexible pavements.

Kestler, M.A., MP 3864, International Conference on Cold Regions Engineering, 8th, Fairbanks, AK, Aug. 12-16, 1996. Proceedings. Cold regions infrastructure: an international imperative for the 21st century. Edited by R.F. Carlson, New York, American Society of Civil Engineers, 1996, p.878-889, 7 refs.

DLC TA713.I55 1996

Pavements, Subgrade soils, Soil freezing, Frost heave, Thaw weakening, Frost protection, Subsurface drainage, Waterproofing, Subgrade maintenance, Road maintenance, United States—New Hampshire

Open Graded Bases (OGB) and Rapid Draining Material (RDM) to promote horizontal drainage of water from pavement systems have not been used extensively in the United States until recently. Drainage layers are now required beneath most Army and Air Force pavements, whether rigid or flexible. To assess the effectiveness of an OGB within a flexible pavement in areas of seasonal freezing and to ultimately evaluate the optimum OGB location within a pavement structure, three test sections with an OGB layer at different depths within the pavement structure were constructed on a USDA Forest Service Road in Berlin, NH. The sections were monitored for surface and subsurface temperature, moisture content, frost heave, pavement stiffness, and meltwater (water introduced by freeze-thaw cycles) collected in the drainage layer. Compilation of field data from these sections constitutes the first in a series of steps to determine the optimum location within a pavement system (in areas of seasonal frost) for OGB placement. This paper discusses drainage test section design, construction, instrumentation, observations to date, and overall strategy for determining the optimal OGB location.

50-6180

Pavement design applying allowable frost heave.

Saarelainen, S., International Conference on Cold Regions Engineering, 8th, Fairbanks, AK, Aug. 12-16, 1996. Proceedings. Cold regions infrastructure: an international imperative for the 21st century. Edited by R.F. Carlson, New York, American Society of Civil Engineers, 1996, p.890-898, 6 refs.

DLC TA713.I55 1996

Pavements, Subgrade soils, Soil freezing, Frost heave, Frost protection, Road maintenance, Subgrade maintenance

50-6181

Environmental-induced longitudinal cracking in cold regions pavements.

Scher, R.L., International Conference on Cold Regions Engineering, 8th, Fairbanks, AK, Aug. 12-16, 1996. Proceedings. Cold regions infrastructure: an international imperative for the 21st century. Edited by R.F. Carlson, New York, American Society of Civil Engineers, 1996, p.899-909, 22 refs.

DLC TA713.I55 1996

Pavements, Cracking (fracturing), Permafrost beneath roads, Permafrost preservation, Permafrost control, Frost heave, Frost action, Frost protection, Road maintenance

50-6182

Concrete pavements in tunnels.

Berg, J.S., Noss, P.M., International Conference on Cold Regions Engineering, 8th, Fairbanks, AK, Aug. 12-16, 1996. Proceedings. Cold regions infrastructure: an international imperative for the 21st century. Edited by R.F. Carlson, New York, American Society of Civil Engineers, 1996, p.911-922.

DLC TA713.I55 1996

Tunnels, Concrete pavements, Concrete slabs, Concrete durability, Road maintenance, Norway

50-6183

Pavement distress caused by deep heave in Anchorage, Alaska.

Tart, R.G., Jr., Musial, M.R., Krueger, M.E., International Conference on Cold Regions Engineering, 8th, Fairbanks, AK, Aug. 12-16, 1996. Proceedings. Cold regions infrastructure: an international imperative for the 21st century. Edited by R.F. Carlson, New York, American Society of Civil Engineers, 1996, p.923-934, 9 refs.

DLC TA713.I55 1996

Pavements, Subgrade soils, Soil freezing, Frost heave, Frost resistance, Frost protection, Road maintenance, United States—Alaska—Anchorage

50-6184

Minimizing costs of northern highways by using BST.

MacLeod, D.R., Walsh, R., International Conference on Cold Regions Engineering, 8th, Fairbanks, AK, Aug. 12-16, 1996. Proceedings. Cold regions infrastructure: an international imperative for the 21st century. Edited by R.F. Carlson, New York, American Society of Civil Engineers, 1996, p.935-946, 4 refs.

DLC TA713.I55 1996

Pavements, Bitumens, Permafrost beneath roads, Road maintenance, Subgrade maintenance, Cost analysis

50-6185

Roads and airfields in cold regions.

Vinson, T.S., ed, Rooney, J.W., ed, Haas, W.H., ed, Technical Council on Cold Regions Engineering monograph, New York, American Society of Civil Engineers, 1996, 321p., Refs. passim. For individual papers see 50-6186 through 50-6195.

DLC TL725.3.C6R63 1996

Highway planning, Road maintenance, Runways, Pavements, Frost resistance, Frost protection, Cold weather construction

50-6186

Road and airfield development in the subarctic and Arctic, Alaska and northwest Canada.

Rooney, J.W., Vinson, T.S., Technical Council on Cold Regions Engineering monograph. Roads and airfields in cold regions. Edited by T.S. Vinson, J.W. Rooney, and W.H. Haas, New York, American Society of Civil Engineers, 1996, p.1-22, Refs. p.19-22.

DLC TL725.3.C6R63 1996

Highway planning, Aircraft landing areas, Runways, Road maintenance, Pavements, Cold weather construction, United States—Alaska, Canada—Yukon Territory

50-6187

Route location/siting: a review of practices.

Schraeder, R.L., Riddle, C.H., Slater, W.H., Technical Council on Cold Regions Engineering monograph. Roads and airfields in cold regions. Edited by T.S. Vinson, J.W. Rooney, and W.H. Haas, New York, American Society of Civil Engineers, 1996, p.23-55, Refs. p.49-55.

DLC TL725.3.C6R63 1996

Highway planning, Airports, Route surveys, Site surveys, Road maintenance, Cold weather construction

50-6188

Frost action.

Pufahl, D.E., Technical Council on Cold Regions Engineering monograph. Roads and airfields in cold regions. Edited by T.S. Vinson, J.W. Rooney, and W.H. Haas, New York, American Society of Civil Engineers, 1996, p.57-85, Refs. p.82-85.

DLC TL725.3.C6R63 1996

Subgrade soils, Soil freezing, Frost resistance, Frost penetration, Frost heave, Thaw weakening, Thaw depth, Frost action, Road maintenance, Runways

50-6189

Temporary snow and ice pavement structures.

Scher, R.L., Technical Council on Cold Regions Engineering monograph. Roads and airfields in cold regions. Edited by T.S. Vinson, J.W. Rooney, and W.H. Haas, New York, American Society of Civil Engineers, 1996, p.87-119, Refs. p.117-119.

DLC TL725.3.C6R63 1996

Ice roads, Snow roads, Ice runways, Ice (construction material), Snow (construction material), Trafficability, Cold weather construction

50-6190

Road and airfield design for permafrost conditions.

Esch, D.C., Technical Council on Cold Regions Engineering monograph. Roads and airfields in cold regions. Edited by T.S. Vinson, J.W. Rooney, and W.H. Haas, New York, American Society of Civil Engineers, 1996, p.121-149, Refs. p.147-149.

DLC TL725.3.C6R63 1996

Permafrost beneath roads, Permafrost preservation, Permafrost control, Soil stabilization, Frozen ground settling, Runways, Embankments, Road maintenance

50-6191

Mechanistic design of asphalt concrete pavements in cold regions.

Vinson, T.S., Rooney, J.W., Technical Council on Cold Regions Engineering monograph. Roads and airfields in cold regions. Edited by T.S. Vinson, J.W. Rooney, and W.H. Haas, New York, American Society of Civil Engineers, 1996, p.151-201, Refs. p.198-201.

DLC TL725.3.C6R63 1996

Bituminous concretes, Concrete pavements, Concrete strength, Concrete durability, Runways, Road maintenance, Cold weather construction, Trafficability, Design criteria, Stress strain diagrams, United States—Alaska

50-6192

Low temperature cracking and rutting in asphalt concrete pavements.

Vinson, T.S., Hicks, R.G., Janoo, V.C., MP 3865, Technical Council on Cold Regions Engineering monograph. Roads and airfields in cold regions. Edited by T.S. Vinson, J.W. Rooney, and W.H. Haas, New York, American Society of Civil Engineers, 1996, p.203-248, Refs. p.242-248.

DLC TL725.3.C6R63 1996

Bituminous concretes, Concrete pavements, Concrete strength, Concrete durability, Frost resistance, Runways, Cold weather construction, Low temperature tests, Thermal stresses, Crack propagation, Road maintenance

Asphalt concrete (AC) pavements in cold regions can experience two types of distress that are historically considered to be related to temperature, namely, low temperature cracking and rutting. At the present time the material factors that influence the resistance of an AC mixture to low temperature cracking are reasonably well understood. The temperature susceptibility of the asphalt cement is the primary factor. Rutting under traffic loading is related to the gradational and fracture characteristics of the aggregate in the AC mixture and not of the asphalt cement alone. A number of design approaches which incorporate the results from laboratory tests on the asphalt cement or the AC mixture are available to the cold regions engineer to minimize the potential for low temperature cracking and rutting distress in an AC pavement structure.

50-6193

Road and airfield maintenance.

Becker, J.C., Esch, D.C., Technical Council on Cold Regions Engineering monograph. Roads and airfields in cold regions. Edited by T.S. Vinson, J.W. Rooney, and W.H. Haas, New York, American Society of Civil Engineers, 1996, p.249-269, 9 refs.

DLC TL725.3.C6R63 1996

Road icing, Road maintenance, Runways, Snow removal, Cold weather operation, United States—Alaska

50-6194

Use of geosynthetics in road and airfield construction in cold regions.

Kinney, T.C., Technical Council on Cold Regions Engineering monograph. Roads and airfields in cold regions. Edited by T.S. Vinson, J.W. Rooney, and W.H. Haas, New York, American Society of Civil Engineers, 1996, p.271-287, Refs. p.284-287.

DLC TL725.3.C6R63 1996

Road maintenance, Runways, Subgrade soils, Frost protection, Geotextiles, Cold weather construction

50-6195

Material properties, specifications and testing for pavements in cold regions.

Chamberlain, E.J., Janoo, V.C., Ketcham, S.A., MP 3866, Technical Council on Cold Regions Engineering monograph. Roads and airfields in cold regions. Edited by T.S. Vinson, J.W. Rooney, and W.H. Haas, New York, American Society of Civil Engineers, 1996, p.289-318, Refs. p.314-318.

DLC TL725.3.C6R63 1996

Bitumens, Pavements, Concrete pavements, Concrete freezing, Frost resistance, Frost protection, Freeze thaw tests, Cold weather tests, Runways, Road maintenance

Pavements in cold regions are subjected to annual freeze thaw cycles. The material properties are affected by the changing in-situ temperature and moisture conditions. These materials need to be characterized as a function of temperature and moisture. This section reviews current material specifications and testing for pavements in cold regions.

50-6196

Rapid variations in atmospheric methane concentration during the past 110,000 years.

Brook, E.J., Sowers, T., Orchardo, J., *Science*, Aug. 23, 1996, 273(5278), p.1087-1091, 47 refs.

Ice cores, Atmospheric composition, Chemical composition, Greenland

50-6197

Airborne Polar Experiment.

CNR Direzione Centrale Attivitá Scientifiche, *Ambiente Antartide*, Apr. 30, 1994, Special issue, p.1-35, Refs. p.34.

Ozone, Atmospheric composition, Chemical analysis, Stratosphere, Aerosols, Meteorological instruments, Remote sensing, Aircraft, Logistics, Research projects, Cost analysis

This special issue of Ambiente Antartide describes the Airborne Polar Experiment, an international program on polar atmosphere: its objectives, mainly to study ozone production and loss mechanism in polar regions; the scientific and technical aspects, including instruments used and logistics and operations; its functional organization and supporting institutions; and cost analysis. It also presents an introductory statement to the 2nd Workshop on Airborne Polar Experiment, held in Rome, Nov. 22-24, 1993.

50-6198
Design and analysis of a low speed drag plow for use in deep snow.
Walsh, M.R., MP 3867, Hanover, Dartmouth College, June 1991, 130p., ME. thesis. 13 refs. For another version see 47-1894.
Snow vehicles, Military equipment, Military research, Snow removal equipment, Mechanical properties, All terrain vehicles, Snow roads, Trafficability, Mechanical tests, Design, Snow mechanics, Traction, Ice solid interface
Off-road winter logistical operations for the U.S. Army's Sixth Infantry Division (Light) are limited due to equipment restrictions and snow depth. Only one vehicle, the Small Unit Support Vehicle (SUSV), is capable of maneuvering in snow deeper than 20 cm. For successful winter deployment, a method of enabling the use of wheeled vehicles off road was required. The concept of an independent drag-plow attached to the pintel mount of the SUSV was proposed to accomplish this task. Small scale testing revealed severe stability problems with a towed wedge-shaped plow. Parameters measured during testing included pitch and roll angles, drawbar forces, speed, plowed path geometry, and snow characteristics. These parameters were used to determine the feasibility of a full scale model capable of plowing a 2.45 m path in 1 m deep low density snow, leaving 15 cm of snow as ground cover. Results of the half-scale tests were very encouraging. The model performed well in medium density snow. Plow penetration was limited by a geometric constraint of the 4-bar linkage, with 15° the approximate maximum link angle from horizontal. Pitch and roll stability in off road applications were excellent, with the plow demonstrating an ability to right itself and dig in after encountering obstacles. Successful half-scale tests have proven the concept of utilizing a SUSV-towed V-plow for clearing access roads in deep snow for off-road winter operations. Data extrapolation of half-scale tests demonstrate that a full scale plow is feasible.

50-6199
Anisotropy in the adsorption of H_2O at low coordination sites on Pt(111).
Morgenstern, M., Michely, T., Comsa, G., *Physical review letters,* July 22, 1996, 77(4), p.703-706, 24 refs.
Ice physics, Low temperature research, Ice solid interface, Adsorption, Aggregates, Metals, Molecular structure, Anisotropy, Molecular energy levels, Scanning electron microscopy, Ice spectroscopy

50-6200
Millimetric radar backscatter from snowcover.
Williams, L.D., Sugden, D.E., Birnie, R.V., University of Edinburgh. Department of Geography. Final report, Edinburgh, Mar. 1987, 130p. + appends., 59 refs.
Remote sensing, Microwaves, Radar echoes, Military research, Snow cover structure, Classifications, Snow optics, Surface roughness, Backscattering, Statistical analysis, Snow cover effect, Sensors, Performance

50-6201
On the climatological mean circulation over the eastern Bering Sea shelf.
Reed, R.K., Stabeno, P.J., *Continental shelf research,* Aug. 1996, 16(10), p.1297-1305, 10 refs.
Oceanography, Subpolar regions, Ocean currents, Velocity measurement, Climatology, Advection, Seasonal variations, Topographic effects, Bering Sea

50-6202
Morphology of the inland ice sheet and nunatak areas of western Dronning Maud Land.
Swithinbank, C., Norwegian-British-Swedish Antarctic Expedition, 1949-52. Scientific results, Vol.III, D, Oslo, Norway, Norsk Polarinstitut, 1959, p.99-117 + Fig.2 and Plates, 13 refs.
Ice sheets, Ice structure, Geology, Structural analysis, Antarctica—Queen Maud Land
The surface of the inland ice sheet is smooth and almost featureless. Crevassing is confined to marginal areas and to Ice Stream A. The surface contours of the ice sheet reflect, in a very subdued manner, the contours of the rock bottom. The mountain range along the edge of the plateau is composed of mainly metamorphic rocks; everything to the north and west is sedimentary. There are no signs of a pre-glacial pattern of water drainage, nor traces of water sculpturing. There are few true cirques but many incipient forms. Contemporary development is characterized by active scarp recession caused by ice abrasion and frost shattering. Summits are preserved intact. Pyramid forms represent the final stage in the breakdown of nunataks. Differential scarp recession is accentuated by the channelling of ice drainage from the plateau. The result is the alignment of nunataks in the direction of ice movement. Southern exposures have recently emerged from the ice sheet, while the northern remnants are in a late stage of destruction. (Auth. mod.)

50-6203
Regime of the ice sheet of western Dronning Maud Land as shown by stake measurements.
Swithinbank, C., Norwegian-British-Swedish Antarctic Expedition, 1949-52. Scientific results, Vol.III, E, Oslo, Norway, Norsk Polarinstitut, 1959, p.123-143 + Plates, 11 refs.
Ice accretion, Ablation, Wind erosion, Topographic effects, Antarctica—Queen Maud Land
The object of the study of regime was to measure the amount of accumulation inland. 138 stakes spread over a 300 km route were measured four times in 16 months. The heaviest accumulation, up to 3 m of snow in 12 months, is found on local summit areas; orographic precipitation is the probable explanation. Regime is positive at all points, but local variations are very great. Katabatic winds remove snow from convex surfaces and slopes and allow it to come to rest on nearby flat areas. The scale of the dumping of snow at the foot of slopes is proportional to the length of slope and the altitude interval, but accumulation maxima always lie close to the foot of the slope. There is no evidence to support the view that large quantities of snow are removed from the inland ice sheet and spread widely over the adjacent ice shelves. The proportion of summer to annual accumulation is analyzed; there are considerable variations along the route. These can be explained by local orographic precipitation, which is heaviest in summer. (Auth. mod.)

50-6204
Hearing before the Subcommittee on Aviation of the Committee on Public Works and Transportation, House of Representatives, One Hundred Second Congress, Second Session (102-70), on Government and industry programs related to aircraft deicing and other safety matters, August 4, 1992.
U.S. Congress. House. Committee on Public Works and Transportation, Washington, D.C., U.S. Government Printing Office, 1992, 252p.
DLC KF27.P89624 1992
Airborne equipment, Aircraft, Aircraft icing, Aircraft landing areas, Safety, Legislation, Antifreezes, Fatigue (materials)

50-6205
How to paint a snowflake.
Benko, J.J., *Microscope,* 1995, 43(4), p.195-197, 1 ref.
Snowflakes, Snow crystal structure, Replicas, Laboratory techniques, Stereophotography, Colored snow, Sublimation

50-6206
Numerical modelling of ice jam resistance to main channel flow.
Saadé, R.G., Amruther, Ramamurthy, A.S., Troitsky, M.S., *International journal for numerical methods in fluids,* Dec. 15, 1995, 21(11), p.1109-1120, 14 refs.
River flow, River ice, Ice jams, Ice mechanics, Ice water interface, Grounded ice, Water flow, Water level, Hydrodynamics, Ice cover effect, Mathematical models, Simulation

50-6207
Off-rift and rift-zone palaeostresses in northwest Iceland.
Gudmundsson, A., Bergerat, F., Angelier, J., *Tectonophysics,* Apr. 30, 1996, 255(3-4), p.211-228, 31 refs.
Tectonics, Earth crust, Subpolar regions, Geomorphology, Tensile properties, Stress concentration, Geologic processes, Rock mechanics, Iceland

50-6208
Early Tertiary Eurekan palaeostresses in the eastern Sverdrup Basin (Ellesmere and Axel Heiberg Island, Canadian arctic islands.
Lepvrier, C., van Berkel, J.T., Schwerdtner, W.M., *Tectonophysics,* Apr. 30, 1996, 255(3-4), p.229-241, 46 refs.
Pleistocene, Arctic landscapes, Tectonics, Shear stress, Earth crust, Deformation, Geologic processes, Canada—Northwest Territories—Axel Heiberg Island, Canada—Northwest Territories—Ellesmere Island

50-6209
Cold regions engineering research—a strategic plan.
Carlson, R.F., ed, Zarling, J.P., ed, Link, L.E., ed, MP 3868, University of Alaska, Fairbanks. Institute of Northern Engineering. Report 201, [1988], 27p., Proceedings of a workshop, Hanover, NH, Nov. 30-Dec. 1-2, 1988. 5 refs. For another source see 44-1761.
Meetings, Research projects, Cold weather operation, Cold weather construction, Engineering, Offshore structures, Watersheds, Transportation, Climatology, Environmental protection

50-6210
Interstellar dust absorption features in the infrared spectrum of HH 100-IR: searching for the nitrogen component of the ices.
Whittet, D.C.B., et al, *Astrophysical journal,* Feb. 10, 1996, 458(1)pt.1, p.363-370, 63 refs.
Extraterrestrial ice, Cosmic dust, Radiation absorption, Hydrates, Infrared radiation, Ice spectroscopy, Ice composition, Ice detection, Attenuation, Spectra

50-6211
Fluctuations of the South Patagonian ice-field during the last glaciation and the Holocene.
Marden, C.J., Clapperton, C.M., *Journal of quaternary science,* Sep. 1995, 10(3), p.197-210, 55 refs.
Pleistocene, Geomorphology, Glacial geology, Glacier oscillation, Moraines, Ice edge, Classifications, Radioactive age determination, Geochronology, Quaternary deposits, Chile—Patagonia

50-6212
Vertical dimensions of Late Devensian glaciation on the mountains of Harris and southeast Lewis, Outer Hebrides, Scotland.
Ballantyne, C.K., McCarroll, D., *Journal of quaternary science,* Sep. 1995, 10(3), p.211-223, Refs. p.221-223.
Pleistocene, Ice sheets, Ice edge, Glaciation, Glacial geology, Bedrock, Nunataks, Weathering, Frost shattering, Periglacial processes, Glacial deposits, X ray diffraction, United Kingdom—Scotland

50-6213
Stratigraphy and sedimentology of Devensian (Dimlington Stadial) glacial deposits, east Yorkshire, England.
Evans, D.J.A., Owen, L.A., Roberts, D., *Journal of quaternary science,* Sep. 1995, 10(3), p.241-265, Refs. p.264-265.
Pleistocene, Glacial geology, Glacial deposits, Quaternary deposits, Geomorphology, Stratigraphy, Sediment transport, Glacier beds, Classifications, Lithology, United Kingdom—England

50-6214
Late Pleistocene deposits at Block Fen, Cambridgeshire, England.
West, R.G., Peglar, S.M., Pettit, M.E., Preece, R.C., *Journal of quaternary science,* Sep. 1995, 10(3), p.285-310, 40 refs.
Pleistocene, Paleobotany, Glacial deposits, Quaternary deposits, Gravel, Palynology, Stratigraphy, Permafrost indicators, Thermal stresses, Sea level, United Kingdom—England

50-6215
Computer simulations of Alaskan neotectonics.
Bird, P., *Tectonics,* Apr. 1996, 15(2), p.225-236, 47 refs.
Tectonics, Geologic processes, Earth crust, Geologic structures, Computerized simulation, Sliding, Shear stress, United States—Alaska

50-6216
Characteristics of the concentration and composition of aerosols during foehn in West Greenland.
Kikuchi, K., Taniguchi, T., Uyeda, H., *Tellus,* July 1996, 48B(3), p.372-386, 43 refs.
Climatology, Polar atmospheres, Atmospheric composition, Air pollution, Aerosols, Atmospheric boundary layer, Wind factors, Wind direction, Sampling, Origin, Chemical analysis, Greenland

50-6217

North Atlantic ocean circulation during the last glacial maximum and subsequent meltwater event: a numerical model.

Seidov, D., Sarnthein, M., Stattegger, K., Prien, R., Weinelt, M., *Journal of geophysical research,* July 15, 1996, 101(C7), p.16,305-16,332, Refs. p.16,331-16,332.

Paleoclimatology, Oceanography, Ocean currents, Marine meteorology, Surface temperature, Hydrography, Icebergs, Ice melting, Meltwater, Wind factors, Convection, Mathematical models, Atlantic Ocean

50-6218

Observation of autumn freeze-up in the Beaufort and Chukchi Seas using the ERS 1 synthetic aperture radar.

Winebrenner, D.P., Holt, B., Nelson, E.D., *Journal of geophysical research,* July 15, 1996, 101(C7), p.16,401-16,419, 33 refs.

Oceanography, Ice surveys, Sea ice distribution, Classifications, Freezeup, Freezing points, Remote sensing, Synthetic aperture radar, Radar photography, Image processing, Backscattering, Seasonal variations, Beaufort Sea, Chukchi Sea

50-6219

Modeling the near-freezing dichothermal layer in the Sea of Okhotsk and its interannual variations.

Yang, J.Y., Honjo, S., *Journal of geophysical research,* July 15, 1996, 101(C7), p.16,421-16,433, 24 refs.

Oceanography, Ocean currents, Sea ice distribution, Seasonal freeze thaw, Hydrography, Convection, Water temperature, Stratification, Profiles, Mathematical models, Ice cover effect, Ice water interface, Okhotsk Sea

50-6220

Antifreeze glycoproteins inhibit leakage from liposomes during thermotropic phase transitions.

Hays, L.M., Feeney, R.E., Crowe, L.M., Crowe, J.H., Oliver, A.E., *National Academy of Sciences—USA. Proceedings,* June 25, 1996, 93(13), p.6835-6840, 39 refs.

Marine biology, Cryobiology, Antifreezes, Chemical properties, Phase transformations, Liquid cooling

Antifreeze glycoproteins (AFGPs) found in the blood of antarctic fish are known to prevent ice crystal growth and depress the freezing temperature of the blood. Previously, Rubinsky et al. provided evidence that AFGPs block ion fluxes across membranes during cooling, an effect that they ascribed to interactions with ion channels. The authors investigated the effects of AFGPs on the leakage of a trapped marker from liposomes during chilling. As these liposomes are cooled through the transition temperature, they leak ca. 50% of their contents. Addition of less then 1 mg/ml of AFGP prevents up to 100% of this leakage, both during chilling and warming through the phase transition. This is a general effect that applies to liposomes composed of phospholipids with transition temperatures ranging from 12°C to 41°C. It is concluded that the stabilizing effects of AFGPs on intact cells during chilling reported by Rubinsky may be due to a nonspecific effect on the lipid components of native membranes. There are other proteins that prevent leakage, but only under specialized conditions. (Auth. mod.)

50-6221

Ice nucleation activity in biological materials with examples from antarctic plants.

Worland, M.R., Block, W., Oldale, H., *Cryo-letters,* Jan.-Feb. 1996, 17(1), p.31-38, 21 refs.

Ice crystal nuclei, Particle size distribution, Plant physiology, Cooling rate, Spectra, Antarctica—Signy Island

The freezing droplet method for determination of ice nucleator activity (INA) was assessed using samples of cold-adapted plant material (19 species) from South Georgia and the maritime Antarctic. The objectives were to quantify the effect of variables such as particle size, cooling rate and sample preparation on INA in order to standardize experimental protocols and data analysis. Three sizes of particles and 4 cooling rates were used for a foliose lichen *(Usnea aurantiaco-atra),* whilst fresh v. air-dried material were compared for a moss *(Bryum algens).* Smaller particles showed significantly higher INA than larger particles and the 4 cooling rates gave significantly different INA for the lichen, whereas sample drying significantly depressed INA in the moss. Representative INA spectra allowed comparison of the 19 species of lichens, mosses and flowering plants. First nucleation temperatures varied from -4.1°C to -5.4°C. At -7°C the mean numbers of nuclei per gram ranked as lichens>mosses>flowering plants and ranged from 257,000 to 16,220 nuclei per gram. It is crucial that procedures used in INA experiments be standardized to enable valid comparison between datasets and different studies to be made. (Auth. mod.)

50-6222

Condensation dynamics of cometary ice analogs in view of primordial accretion of volatiles on grain surfaces: a study through infrared spectroscopy.

Patnaik, A., Roessler, K., *Spectrochimica acta A,* Aug. 1996, 52A(9), p.1085-1094, 31 refs.

Ice physics, Extraterrestrial ice, Cosmic dust, Simulation, Ice spectroscopy, Infrared spectroscopy, Spectra, Condensation, Ice sublimation, Ice solid interface, Ice cover thickness, Photochemical reactions

50-6223

Character, paleoenvironment, rate of accumulation, and evidence for seismic triggering of Holocene turbidites, Canada Abyssal Plain, Arctic Ocean.

Grantz, A., et al, *Marine geology,* July 1996, 133(1-2), p.51-73, 46 refs.

Marine geology, Oceanography, Pleistocene, Marine deposits, Ice rafting, Quaternary deposits, Earthquakes, Paleoecology, Sedimentation, Radioactive age determination, Drill core analysis, Stratigraphy, Arctic Ocean

50-6224

Study of brash ice in the proximal marine zone of a sub-polar tidewater glacier.

Smith, N.D., Ashley, G.M., *Marine geology,* July 1996, 133(1-2), p.75-87, 48 refs.

Oceanography, Sea ice, Icebergs, Distribution, Calving, Ice rafting, Ice composition, Sedimentation, Marine deposits, Ice melting, Ice water interface, Lithology, Antarctica—Anvers Island

Intermittent calving of tidewater Maar Glacier into Arthur Harbor (Anvers I., Antarctic Peninsula) produces mainly brash ice (fragments <2 m in diameter). To assess the potential role of brash ice in the seaward transport of glacigenic sediment in this subpolar region, measurements were made of (1) brash melt rates under laboratory and field conditions and (2) size distributions of freshly calved brash. In constant-temperature (1°C) laboratory runs, melt rates for similarly shaped bergs increased significantly with relative flow velocity and were also greater for bergs containing fractures or air bubbles. Under field conditions, brash bergs subjected to rough open water were observed to melt approximately 20 times faster (range=12-26) than those locked in densely packed jams protected from wave and current action. For an average population of freshly calved brash subjected to mean open-water melt rates observed in Arthur Harbor, over 90% of the bergs will completely melt within 24 hours. Consequently, little brash escapes the proximal marine zone, and most debris rafted by such bergs is probably deposited within a few hundred meters of the glacier terminus. (Auth. mod.)

50-6225

Towed geophone system for use in snow-covered terrain.

King, E.C., Bell, A.C., *Geophysical journal international,* July 1996, 126(1), p.54-62, 16 refs.

Glaciology, Ice shelves, Stratigraphy, Ice acoustics, Acoustic measurement, Seismic reflection, Sounding, Cables (ropes), Joints (junctions), Snow cover effect, Plastics snow friction, Skis, Performance, Design

A new type of drag cable has been developed, which was successfully used to collect seismic reflection data on an antarctic ice shelf. Standard geophone elements were encapsulated in polyurethane to form 25 m long, rectangular sections. The resultant towed array resembles a 300 m long flexible ski. The use of a towed cable provided substantial time and manpower savings over the use of planted geophones. In comparison with drag cables using gimballed geophones, the towed array has a much lower coefficient of friction due to its smooth profile, and it is therefore possible to tow an array using snowmobiles. This provides a significant advantage because a system can be deployed by ski-equipped light aircraft to areas that are difficult or impossible to access using large vehicles. Use of the array enabled a team of four people to acquire 158 km of single-fold seismic reflection data on the Ronne Ice Shelf over two field seasons. The data are the first to show sub-seabed structure beneath this major ice shelf. (Auth. mod.)

50-6226

Empirical study on Nimbus-7 snow mass and Indian summer monsoon rainfall.

Kripalani, R.H., Singh, S.V., Vernekar, A.D., Thapliyal, V., *International journal of climatology,* Jan. 1996, 16(1), p.23-34, 25 refs.

Climatology, Climatic factors, Precipitation (meteorology), Snow surveys, Radiometry, Snow cover distribution, Snow depth, Snow cover effect, Seasonal variations, Weather forecasting, Correlation, India

50-6227

Sea-ice and atmospheric circulation anomalies in the Labrador Sea region associated with extremes of the Southern Oscillation.

Newell, J.P., *International journal of climatology,* Jan. 1996, 16(1), p.63-71, 30 refs.

Climatology, Climatic changes, Polar atmospheres, Atmospheric boundary layer, Atmospheric circulation, Sea ice distribution, Ice breakup, Air ice water interaction, Climatic factors, Atmospheric pressure, Seasonal variations, Correlation, Ice forecasting, Labrador Sea

50-6228

On the scattering behaviour of bullet-rosette and bullet-shaped ice crystals.

Strauss, B., *Annales geophysicae,* May 1996, 14(5), p.566-573, 16 refs.

Climatology, Cloud physics, Ice physics, Ice crystal optics, Ice crystal structure, Orientation, Anisotropy, Light scattering, Backscattering, Refractivity, Particles, Models

50-6229

Review of the geochemistry of methane in natural gas hydrate.

Kvenvolden, K.A., *Organic geochemistry,* Nov.-Dec. 1995, 23(11-12), p.997-1008, 53 refs.

Geochemistry, Soil chemistry, Hydrocarbons, Subsea permafrost, Permafrost physics, Hydrates, Natural gas, Chemical composition, Isotope analysis, Stability, Distribution

50-6230

Microbial biomass C, N and P in two arctic soils and responses to addition of NPK fertilizer and sugar: implications for plant uptake.

Jonasson, S., Michelsen, A., Schmidt, I.K., Nielsen, E.V., Callaghan, T.V., *Oecologia,* June 1996, 106(1), p.507-515, 46 refs.

Plant physiology, Ecosystems, Tundra soils, Tundra vegetation, Plants (botany), Soil chemistry, Soil microbiology, Biomass, Nutrient cycle, Soil tests, Sampling

50-6231

Natural cleaning of oiled coarse sediment shorelines in arctic and Atlantic Canada.

Owens, E.H., Humphrey, B., Sergy, G.A., *Spill science & technology bulletin,* Sep. 1994, 1(1), p.37-52, 34 refs.

Oil spills, Beaches, Soil pollution, Crude oil, Degradation, Weathering, Soil aggregates, Solubility, Dispersions, Sediments, Environmental impact, Canada—Northwest Territories—Baffin Island

50-6232

Proceedings.

International Symposium on Glacial Erosion and Sedimentation, Reykjavik, Iceland, Aug. 20-25, 1995, Collins, D., ed, *Annals of glaciology,* 1996, Vol.22, 264p., Refs. passim. For individual papers see 50-6233 through 50-6269.

Glaciology, Glacial geology, Glacial erosion, Glacial hydrology, Sedimentation, Sediment transport, Ice solid interface, Glacier flow, Hydrogeology, Ice mechanics, Hydrogeochemistry

50-6233

Glacial quarrying: a simple theoretical model.

Hallet, B., *Annals of glaciology,* 1996, Vol.22, International Symposium on Glacial Erosion and Sedimentation, Reykjavik, Iceland, Aug. 20-25, 1995. Proceedings. Edited by D. Collins et al, p.1-8, 43 refs.

Glaciology, Glacial geology, Glacial erosion, Bedrock, Stress concentration, Cracking (fracturing), Crack propagation, Ice solid interface, Sliding, Mathematical models

50-6234

Abraded rock landforms (whalebacks) developed under ice streams in mountain areas.

Evans, I.S., *Annals of glaciology*, 1996, Vol.22, International Symposium on Glacial Erosion and Sedimentation, Reykjavik, Iceland, Aug. 20-25, 1995. Proceedings. Edited by D. Collins et al, p.9-16, 28 refs.

Glaciology, Mountain glaciers, Glacial geology, Landforms, Geomorphology, Glacial erosion, Sliding, Ice solid interface, Bedrock, Abrasion, Lithology

50-6235

Is erosion by deforming subglacial sediments significant? (Toward till continuity).

Cuffey, K., Alley, R.B., *Annals of glaciology*, 1996, Vol.22, International Symposium on Glacial Erosion and Sedimentation, Reykjavik, Iceland, Aug. 20-25, 1995. Proceedings. Edited by D. Collins et al, p.17-24, 47 refs.

Glaciology, Glacial geology, Glacial erosion, Ice solid interface, Sliding, Glacier beds, Sediment transport, Deformation, Substrates, Hardness, Abrasion, Mathematical models

50-6236

Subglacial chemical erosion: seasonal variations in solute provenance, Haut Glacier d'Arolla, Valais, Switzerland.

Brown, G.H., Sharp, M., Tranter, M., *Annals of glaciology*, 1996, Vol.22, International Symposium on Glacial Erosion and Sedimentation, Reykjavik, Iceland, Aug. 20-25, 1995. Proceedings. Edited by D. Collins et al, p.25-31, 28 refs.

Glaciology, Glacial geology, Glacial hydrology, Glacial erosion, Weathering, Ice solid interface, Glacier melting, Runoff, Meltwater, Snow composition, Geochemistry, Sampling, Ion density (concentration), Switzerland—Haut Glacier d'Arolla

50-6237

Cavities and the effective pressure between abrading clasts and bedrock.

Hindmarsh, R.C.A., *Annals of glaciology*, 1996, Vol.22, International Symposium on Glacial Erosion and Sedimentation, Reykjavik, Iceland, Aug. 20-25, 1995. Proceedings. Edited by D. Collins et al, p.32-40, 26 refs.

Glaciology, Glacial geology, Glacial erosion, Bedrock, Glacier beds, Glacier flow, Abrasion, Cavitation, Ice solid interface, Water films, Water pressure, Sediment transport

50-6238

Sliding of glacial till over bedrock. [Sliding of till over bedrock: scratching, polishing, comminution and kinematic-wave theory]

Hindmarsh, R.C.A., *Annals of glaciology*, 1996, Vol.22, International Symposium on Glacial Erosion and Sedimentation, Reykjavik, Iceland, Aug. 20-25, 1995. Proceedings. Edited by D. Collins et al, p.41-47, 20 refs.

Glaciology, Glacial geology, Glacial erosion, Sliding, Wave propagation, Ice solid interface, Bedrock, Lithology, Sediment transport, Surface roughness, Specular reflection, Analysis (mathematics)

50-6239

Erosion rates and sediment yields of glaciers.

Bogen, J., *Annals of glaciology*, 1996, Vol.22, International Symposium on Glacial Erosion and Sedimentation, Reykjavik, Iceland, Aug. 20-25, 1995. Proceedings. Edited by D. Collins et al, p.48-52, 16 refs.

Glaciology, Glacial geology, Glacial hydrology, Glacial erosion, Sediment transport, Meltwater, Subglacial drainage, Seasonal variations, Suspended sediments, Sampling, Statistical analysis

50-6240

Glacier debris accumulation and sediment deformation influenced by permafrost: examples from Svalbard.

Etzelmüller, B., Hagen, J.O., Vatne, G., Ødegård, R.S., Sollid, J.L., *Annals of glaciology*, 1996, Vol.22, International Symposium on Glacial Erosion and Sedimentation, Reykjavik, Iceland, Aug. 20-25, 1995. Proceedings. Edited by D. Collins et al, p.53-62, 28 refs.

Glaciology, Glacial geology, Moraines, Geomorphology, Glacier flow, Permafrost hydrology, Permafrost mass transfer, Ice solid interface, Deformation, Velocity measurement, Profiles, Sediment transport, Norway—Svalbard

50-6241

Sediment-mass exchange between turbid meltwater streams and proglacial deposits of Storglaciären, northern Sweden.

Holmlund, P., Burman, H., Rost, T., *Annals of glaciology*, 1996, Vol.22, International Symposium on Glacial Erosion and Sedimentation, Reykjavik, Iceland, Aug. 20-25, 1995. Proceedings. Edited by D. Collins et al, p.63-67, 21 refs.

Glaciology, Geomorphology, Glacial geology, Glacial deposits, Sediment transport, Mass transfer, Meltwater, Suspended sediments, Turbidity, Photogrammetry, Sounding, Permafrost transformation, Sweden—Storglaciären

50-6242

Formation of thrust-block moraines at the margins of dry-based glaciers, south Victoria Land, Antarctica.

Fitzsimons, S.J., *Annals of glaciology*, 1996, Vol.22, International Symposium on Glacial Erosion and Sedimentation, Reykjavik, Iceland, Aug. 20-25, 1995. Proceedings. Edited by D. Collins et al, p.68-74, 32 refs.

Glaciology, Glacial geology, Glacial deposits, Moraines, Ice edge, Deformation, Geomorphology, Sediment transport, Sampling, Lithology, Particle size distribution, Antarctica—Victoria Land

Several dry-based alpine glaciers in the Dry Valleys of south Victoria Land have prominent end moraines. Examination of their morphology, structure and sedimentology shows they consist of blocks of sand, gravel and organic silt within which sedimentary structures unrelated to entrainment and transportation by ice are well preserved. The nature and preservation of sedimentary structures, together with the presence of algae mats in the sediment, suggest formation by proglacial entrainment, transportation and deposition of frozen blocks of lacustrine sediment. Previous models appear inappropriate for cold, dry-based glaciers because their basal temperatures are well below freezing point and they rest on deep permafrost. Three alternative models for the formation of thrust-block moraines at the margins of dry-based glaciers are examined in this paper: block entrainment of sediment associated with frozen-bed deformation; entrainment by overriding and accretion of marginal-ice and debris aprons; and transient wet-based conditions associated with glaciers flowing into ice-marginal lakes. (Auth. mod.)

50-6243

Origin of till sequences by subglacial sediment deformation beneath mid-latitude ice sheets.

Boulton, G.S., *Annals of glaciology*, 1996, Vol.22, International Symposium on Glacial Erosion and Sedimentation, Reykjavik, Iceland, Aug. 20-25, 1995. Proceedings. Edited by D. Collins et al, p.75-84, 33 refs.

Glaciology, Pleistocene, Ice sheets, Glacial geology, Geomorphology, Glacial erosion, Ice solid interface, Deformation, Sediment transport, Theories

50-6244

Regional-scale meltwater erosion and deposition patterns, northern Quebec, Canada.

Brennand, T.A., Shaw, J., Sharpe, D.R., *Annals of glaciology*, 1996, Vol.22, International Symposium on Glacial Erosion and Sedimentation, Reykjavik, Iceland, Aug. 20-25, 1995. Proceedings. Edited by D. Collins et al, p.85-92, 17 refs.

Glaciology, Pleistocene, Glacial geology, Glacial hydrology, Lake bursts, Geomorphology, Moraines, Glacial erosion, Meltwater, Sediment transport, Canada—Quebec

50-6245

Implications of till provenance studies for glaciological reconstructions of the paleoglaciers of Wildhorse Canyon, Idaho, U.S.A.

Brugger, K.A., *Annals of glaciology*, 1996, Vol.22, International Symposium on Glacial Erosion and Sedimentation, Reykjavik, Iceland, Aug. 20-25, 1995. Proceedings. Edited by D. Collins et al, p.93-101, 30 refs.

Glaciology, Pleistocene, Glacial geology, Moraines, Glacier mass balance, Glacier flow, Snow line, Lithology, Quaternary deposits, United States—Idaho

50-6246

Glacial cirque formation in northern Scandinavia.

Richardson, C., Holmlund, P., *Annals of glaciology*, 1996, Vol.22, International Symposium on Glacial Erosion and Sedimentation, Reykjavik, Iceland, Aug. 20-25, 1995. Proceedings. Edited by D. Collins et al, p.102-106, 19 refs.

Glaciology, Cirque glaciers, Glacial geology, Glacial erosion, Geomorphology, Landforms, Permafrost structure, Radio echo soundings, Drill core analysis, Ice temperature, Profiles, Sweden

50-6247

Basal debris entrainment and transport in glaciers of southwestern Bylot Island, Canadian Arctic.

Zdanowicz, C.M., Michel, F.A., Shilts, W.W., *Annals of glaciology*, 1996, Vol.22, International Symposium on Glacial Erosion and Sedimentation, Reykjavik, Iceland, Aug. 20-25, 1995. Proceedings. Edited by D. Collins et al, p.107-113, 27 refs.

Glaciology, Glacial geology, Glacier beds, Ice solid interface, Regelation, Sediment transport, Ice accretion, Ice composition, Sampling, Profiles, Geochemistry, Canada—Northwest Territories—Bylot Island

50-6248

Characteristics of basal ice at Engabreen, northern Norway.

Jansson, P., Kohler, J., Pohjola, V.A., *Annals of glaciology*, 1996, Vol.22, International Symposium on Glacial Erosion and Sedimentation, Reykjavik, Iceland, Aug. 20-25, 1995. Proceedings. Edited by D. Collins et al, p.114-120, 14 refs.

Glaciology, Glacial geology, Glacial hydrology, Ice solid interface, Glacier beds, Sediments, Bottom ice, Subglacial drainage, Regelation, Ice tunnels, Ice cores, Stratigraphy, Ice composition, Profiles, Norway—Engabreen

50-6249

Role of bedrock topography, structure, ice dynamics and preglacial weathering in controlling subglacial erosion beneath a high-latitude, maritime ice field.

Rea, B.R., Whalley, W.B., *Annals of glaciology*, 1996, Vol.22, International Symposium on Glacial Erosion and Sedimentation, Reykjavik, Iceland, Aug. 20-25, 1995. Proceedings. Edited by D. Collins et al, p.121-125, 26 refs.

Glaciology, Glacial geology, Glacial erosion, Ice solid interface, Bedrock, Sediment transport, Weathering, Topographic features, Shear stress

50-6250

Preliminary results of tritium analyses in basal ice, Matanuska Glacier, Alaska, U.S.A.: evidence for subglacial ice accretion.

Strasser, J.C., Lawson, D.E., Larson, G.J., Evenson, E.B., Alley, R.B., MP 3870, *Annals of glaciology*, 1996, Vol.22, International Symposium on Glacial Erosion and Sedimentation, Reykjavik, Iceland, Aug. 20-25, 1995. Proceedings. Edited by D. Collins et al, p.126-133, 30 refs.

Glaciology, Glacial geology, Glacial hydrology, Bottom ice, Subglacial drainage, Ice accretion, Sediment transport, Supercooling, Regelation, Ice composition, Radioactive isotopes, Isotope analysis, Fallout, United States—Alaska—Matanuska Glacier

The stratified-facies ice of the basal zone of Matanuska Glacier, AK, U.S.A., contains significant concentrations of anthropogenic tritium, whereas unaltered englacial-zone ice is devoid of tritium. Supercooled water flowing through subglacial conduits during the melt season likewise contains tritium, as does frazil and other platey ice that nucleates and grows within this subglacially flowing water. These initial results demonstrate net accretion of more than 1.4 m of stratified basal-zone ice since initiation of above-ground thermonu-

clear bomb testing in 1952. Furthermore, the results support a theory of basal ice formation by ice accretion and debris entrainment from supercooled water within a distributed subglacial drainage system.

50-6251

Nature of basal debris in the GISP2 and Byrd ice cores and its relevance to bed processes.

Gow, A.J., Meese, D.A., MP 3871, *Annals of glaciology*, 1996, Vol.22, International Symposium on Glacial Erosion and Sedimentation, Reykjavik, Iceland, Aug. 20-25, 1995. Proceedings. Edited by D. Collins et al, p.134-140, 11 refs.

Glaciology, Glacial geology, Glacial hydrology, Glacier beds, Ice solid interface, Bottom ice, Meltwater, Regelation, Ice cores, Stratigraphy, Ice composition, Sedimentation, Antarctica—Byrd Station, Greenland—Summit

Successful core-drilling to bedrock of both the Greenland and antarctic ice sheets offers unique opportunities for examining processes acting at the bed. At Byrd Station, penetration of the bed was accompanied by upwelling of glacial meltwater into the drillhole. The sediment confirms that incorporation of the debris occurred simultaneously with periodic "freeze-on" of basal meltwater. Currently, the presence of substantial meltwater at the ice/rock interface likely precludes any erosive activity at the bed. At GISP2 in Greenland, basal silty ice 13.1 m thick is currently frozen to the bed at -9°C. Limited studies of the silty ice at GISP2 together with results of more comprehensive investigations obtained by GRIP researchers on basal ice at a companion site at Summit, indicate that the sediment-bearing basal ice likely formed in the absence of an ice sheet and was therefore unrelated to direct interaction of the present ice sheet with its bed. The fact that the basal ice at Summit is frozen to the bottom also precludes any likelihood of erosive activity at the bed. (Auth. mod.)

50-6252

Scales and rates of glacial sediment removal: a 20 km long, 300 m deep trench created beneath Breidamerkurjökull during the Little Ice Age.

Björnsson, H., *Annals of glaciology*, 1996, Vol.22, International Symposium on Glacial Erosion and Sedimentation, Reykjavik, Iceland, Aug. 20-25, 1995. Proceedings. Edited by D. Collins et al, p.141-146, 29 refs.

Glaciology, Glacier oscillation, Glacial geology, Glacial hydrology, Subglacial drainage, Sediment transport, Mass transfer, Glacial lakes, Excavation, Trenching, Landscape development, Glacial erosion, Geomorphology, Iceland—Breidamerkurjökull

50-6253

Seasonal trend in suspended-sediment transport from an Arctic glacier, and implications for drainage-system structure.

Hodgkins, R., *Annals of glaciology*, 1996, Vol.22, International Symposium on Glacial Erosion and Sedimentation, Reykjavik, Iceland, Aug. 20-25, 1995. Proceedings. Edited by D. Collins et al, p.147-151, 16 refs.

Glaciology, Glacial geology, Glacial hydrology, Glacial erosion, Meltwater, Subglacial drainage, Surface drainage, Sediment transport, Suspended sediments, Seasonal variations, Ice water interface, Sampling, Statistical analysis

50-6254

Lumped-element model for subglacial transport of solute and suspended sediment.

Clarke, G.K.C., *Annals of glaciology*, 1996, Vol.22, International Symposium on Glacial Erosion and Sedimentation, Reykjavik, Iceland, Aug. 20-25, 1995. Proceedings. Edited by D. Collins et al, p.152-159, 14 refs.

Glaciology, Glacial geology, Glacial hydrology, Subglacial drainage, Sediment transport, Suspended sediments, Water transport, Turbidity, Electrical resistivity, Mathematical models, Simulation, Hydrogeology

50-6255

Influence of englacial drainage on sediment-transport pathways and till texture of temperate valley glaciers.

Kirkbride, M., Spedding, N., *Annals of glaciology*, 1996, Vol.22, International Symposium on Glacial Erosion and Sedimentation, Reykjavik, Iceland, Aug. 20-25, 1995. Proceedings. Edited by D. Collins et al, p.160-166, 20 refs.

Glaciology, Glacial geology, Alpine glaciation, Glacial hydrology, Ice caves, Subglacial drainage, Ice edge, Moraines, Sediment transport, Sedimentation, Sampling, Physical properties, Hydraulics

50-6256

Laboratory study of sediment deformation: stress heterogeneity and grain-size evolution.

Iverson, N.R., Hooyer, T.S., Hooke, R.L., *Annals of glaciology*, 1996, Vol.22, International Symposium on Glacial Erosion and Sedimentation, Reykjavik, Iceland, Aug. 20-25, 1995. Proceedings. Edited by D. Collins et al, p.167-175, 24 refs.

Glaciology, Glacial geology, Glacier beds, Glacial erosion, Ice solid interface, Deformation, Sediments, Grain size, Particle size distribution, Shear strain, Abrasion, Mechanical tests, Simulation, Fractals

50-6257

Observations of tunnel channels in glacial sediments with shallow land-based seismic reflection.

Pugin, A., Pullan, S.E., Sharpe, D.R., *Annals of glaciology*, 1996, Vol.22, International Symposium on Glacial Erosion and Sedimentation, Reykjavik, Iceland, Aug. 20-25, 1995. Proceedings. Edited by D. Collins et al, p.176-180, 20 refs.

Glaciology, Pleistocene, Glacial geology, Glacial erosion, Subglacial drainage, Moraines, Tunnels, Water erosion, Topographic features, Hydrogeology, Sediments, Seismic reflection, Profiles

50-6258

Supraglacial debris-transport variability over time: examples from Switzerland and Iceland.

Whalley, W.B., Palmer, C.F., Hamilton, S.J., Kitchen, D., *Annals of glaciology*, 1996, Vol.22, International Symposium on Glacial Erosion and Sedimentation, Reykjavik, Iceland, Aug. 20-25, 1995. Proceedings. Edited by D. Collins et al, p.181-186, 22 refs.

Glaciology, Geomorphology, Glacial geology, Sediment transport, Glacier surfaces, Moraines, Rock glaciers, Mass transfer, Landslides, Sampling, Statistical analysis, Switzerland—Valais, Iceland—Tröllaskagi

50-6259

On the sedimentological character of alpine basal ice facies.

Hubbard, B., Sharp, M., Lawson, W.J., *Annals of glaciology*, 1996, Vol.22, International Symposium on Glacial Erosion and Sedimentation, Reykjavik, Iceland, Aug. 20-25, 1995. Proceedings. Edited by D. Collins et al, p.187-193, 31 refs.

Glaciology, Alpine glaciation, Glacial geology, Bottom ice, Ice composition, Ice structure, Classifications, Sediments, Lithology, Sampling, Grain size, Particle size distribution, Fractals

50-6260

Marine record of the Russell Fiord outburst flood, Alaska, U.S.A.

Cowan, E.A., Carlson, P.R., Powell, R.D., *Annals of glaciology*, 1996, Vol.22, International Symposium on Glacial Erosion and Sedimentation, Reykjavik, Iceland, Aug. 20-25, 1995. Proceedings. Edited by D. Collins et al, p.194-199, 12 refs.

Glaciology, Estuaries, Glacial hydrology, Glacial geology, Glacial lakes, Lake bursts, Water erosion, Turbidity, Suspended sediments, Sediment transport, Lacustrine deposits, Seismic reflection, Profiles, Lithology, United States—Alaska—Russell Fiord

50-6261

Changes in the character of glaciomarine sedimentation in the southwestern Weddell Sea, Antarctica: evidence from the core PS1423-2.

Crawford, K., Kuhn, G., Hambrey, M.J., *Annals of glaciology*, 1996, Vol.22, International Symposium on Glacial Erosion and Sedimentation, Reykjavik, Iceland, Aug. 20-25, 1995. Proceedings. Edited by D. Collins et al, p.200-204, 19 refs.

Marine geology, Glacial geology, Glacial geology, Ice shelves, Sediment transport, Sedimentation, Marine deposits, Ice rafting, Drill core analysis, Lithology, Particle size distribution, Stratigraphy, Antarctica—Weddell Sea

Investigations of the stratigraphy and facies within a 2.69 m long gravity core from the southwestern Weddell Sea indicate a significant change in the character of glaciomarine sedimentation since grounded ice withdrew from the continental shelf. Based on visual description, X-radiography, clast shape, particle-size analysis, physical properties and geochemical data, the core used in this analysis comprises five distinct units, from top to bottom: (i) massive diamicton, (ii) weakly to well-stratified diamicton, (iii) millimeter-scale laminated muds, with little or no coarse-clastic input, (iv) well- to weakly stratified diamicton, (v) massive diamicton. Grounded ice decoupled from the continental shelf to form an ice shelf, probably initiated by a rise in sea level in response to global climatic changes. Following distintegration of the ice shelf, sedimentation was influenced by marked variations in iceberg production. AMS-derived ^{14}C ages from the upper 46 cm of the core indicate that the succession has been deposited since the end of the most recent glacial maximum (late Pleistocene). (Auth. mod.)

50-6262

20th-century glacial-marine sedimentation in Vitus Lake, Bering Glacier, Alaska, U.S.A.

Molnia, B.F., Post, A., Carlson, P.R., *Annals of glaciology*, 1996, Vol.22, International Symposium on Glacial Erosion and Sedimentation, Reykjavik, Iceland, Aug. 20-25, 1995. Proceedings. Edited by D. Collins et al, p.205-210, 7 refs.

Glaciology, Glacial geology, Bedrock, Glacial deposits, Sedimentation, Lacustrine deposits, Seismic reflection, Profiles, Stratigraphy, United States—Alaska—Bering Glacier

50-6263

Morainal-bank sediment budgets and their influence on the stability of tidewater termini of valley glaciers entering Glacier Bay, Alaska, U.S.A.

Hunter, L.E., Powell, R.D., Lawson, D.E., MP 3872, *Annals of glaciology*, 1996, Vol.22, International Symposium on Glacial Erosion and Sedimentation, Reykjavik, Iceland, Aug. 20-25, 1995. Proceedings. Edited by D. Collins et al, p.211-216, 34 refs.

Glaciology, Glacial geology, Glacier flow, Stability, Marine deposits, Bottom sediment, Moraines, Sediment transport, Grounded ice, Ice water interface, Calving, Mass transfer, Sampling, United States—Alaska—Glacier Bay

50-6264

Observations of the grounding-line area at a floating glacier terminus.

Powell, R.D., Dawber, M., McInnes, J.N., Pyne, A.R., *Annals of glaciology*, 1996, Vol.22, International Symposium on Glacial Erosion and Sedimentation, Reykjavik, Iceland, Aug. 20-25, 1995. Proceedings. Edited by D. Collins et al, p.217-223, 20 refs.

Glaciology, Glacial geology, Marine geology, Sedimentation, Ice shelves, Floating ice, Grounded ice, Ice solid interface, Ice composition, Physical properties, Geomorphology, Antarctica—Mackay Glacier

A robotic submarine was used for the first observations of a grounding-line area of a floating glacier. The site was Mackay Glacier which terminates as a floating glacier tongue in the Ross Sea at latitude 77°S. Half of the 20 m thick basal debris layers in Mackay Glacier are deposited as subglacial till in the last 1.8 km that the glacier remains grounded. The other half of the basal debris is melted out up to 1.5 km in front of the grounding line, producing a sheet of glacimarine sediment as shelfstone diamicton and mud draped on subglacial till. Both till and glacimarine sediment may be turbated by icebergs. This simple model of till overlain by shelfstone diamicton and mud is a direct contrast to sedimentary depositional systems at tide-water termini of temperate glaciers. (Auth. mod.)

50-6265

Conceptuallly based model of the interaction between flowing meltwater and subglacial sediment.

Collins, D.N., *Annals of glaciology,* 1996, Vol.22, International Symposium on Glacial Erosion and Sedimentation, Reykjavik, Iceland, Aug. 20-25, 1995. Proceedings. Edited by D. Collins et al, p.224-232, 14 refs.

Glaciology, Glacial geology, Glacial hydrology, Meltwater, Glacial erosion, Sediment transport, Subglacial drainage, Water flow, Suspended sediments, Sampling, Models, Seasonal variations

50-6266

Water and sediment discharge from a large surging glacier: Bering Glacier, Alaska, U.S.A., summer 1994.

Merrand, Y., Hallet, B., *Annals of glaciology,* 1996, Vol.22, International Symposium on Glacial Erosion and Sedimentation, Reykjavik, Iceland, Aug. 20-25, 1995. Proceedings. Edited by D. Collins et al, p.233-240, 28 refs.

Glaciology, Glacial hydrology, Glacial geology, Glacier surges, Ice water interface, Lake bursts, Flooding, Sediment transport, Water erosion, Glacial rivers, Suspended sediments, Sampling, Tidal currents, United States—Alaska—Bering Glacier

50-6267

Thrusting and debris entrainment in a surging glacier: Bakaninbreen, Svalbard.

Hambrey, M.J., Dowdeswell, J.A., Murray, T., Porter, P.R., *Annals of glaciology,* 1996, Vol.22, International Symposium on Glacial Erosion and Sedimentation, Reykjavik, Iceland, Aug. 20-25, 1995. Proceedings. Edited by D. Collins et al, p.241-248, 19 refs.

Glaciology, Glacial geology, Glacial erosion, Glacier surges, Glacier tongues, Grounded ice, Moraines, Profiles, Sediment transport, Tectonics, Norway—Svalbard

50-6268

Jökulhlaup from Katla in 1918.

Tómasson, H., *Annals of glaciology,* 1996, Vol.22, International Symposium on Glacial Erosion and Sedimentation, Reykjavik, Iceland, Aug. 20-25, 1995. Proceedings. Edited by D. Collins et al, p.249-254, 15 refs.

Glaciology, Glacial hydrology, Lake bursts, Sediment transport, Flooding, Icebergs, Magma, Geothermal thawing, Water flow, Water level, Hydrography, Iceland—Katla

50-6269

Role of sediment transport in the mechanics of jökulhlaups.

Fowler, A.C., Ng, F.S.L., *Annals of glaciology,* 1996, Vol.22, International Symposium on Glacial Erosion and Sedimentation, Reykjavik, Iceland, Aug. 20-25, 1995. Proceedings. Edited by D. Collins et al, p.255-259, 15 refs.

Glaciology, Glacial hydrology, Sediment transport, Lake bursts, Flooding, Subglacial drainage, Water erosion, Water pressure, Hydrography, Simulation, Mathematical models

50-6270

Workshop on Antarctic Air Transport Networks.

Council of Managers of National Antarctic Programs, Washington, D.C., 1995, var. p.

Aircraft, Aircraft landing areas, Ice runways, Logistics, Cargo, Equipment, Maintenance, Fuel transport, Safety, Supports, International cooperation, Antarctica

This publication provides a summary of the proceedings of the Workshop on Antarctic Air Transport Networks which was conducted by the Standing Committee on Antarctic Logistics and Operations (SCALOP) in Washington, D.C. from Apr. 19-21, 1995. The workshop included the presentation of seven papers on various aspects of aircraft operations including safety, financial and environmental considerations. Opportunities were provided for representatives from each country to present a summary of their current and desired air activities in Antarctica and each aircraft operator described their operations and capabilities. The workshop concluded with four parallel working group sessions which sought to identify future air support needs and consider opportunities for developing new cooperative air networks. A copy of the papers, visual aids used by speakers, and the working group findings are included in this report.

50-6271

Proceedings.

Sea Ice Mechanics and Arctic Modeling Workshop, Anchorage, AK, Apr. 25-28, 1995, Bellevue, WA, Northwest Research Associates, Inc., 1995, 2 vols., Refs. passim. Vol.1 (245p. + appends.) contains poster presentations of preliminary results and was distributed before the workshop. Vol.2 (328p.) contains the proceedings and was published after the workshop. For selected papers see 48-1480, and 50-6272 through 50-6317.

Ice cover strength, Ice loads, Ice pressure, Ice friction, Ice deformation, Ice cracks, Ice breaking, Pressure ridges, Ice structure, Ice acoustics

50-6272

Acoustic and seismic studies of ice mechanics.

Farmer, D., Xie, Y.B., Sea Ice Mechanics and Arctic Modeling Workshop, Anchorage, AK, Apr. 25-28, 1995. Proceedings. Vol.1, Bellevue, WA, Northwest Research Associates, Inc., 1995, p.7-23, 6 refs.

Ice acoustics, Ice deformation, Ice cracks, Ice breaking, Ice friction, Pressure ridges, Ice water interface, Underwater acoustics, Seismic surveys

50-6273

Transarctic acoustic propagation.

Mikhalevsky, P.N., Baggeroer, A.B., Schmidt, H., Von der Heydt, K., Scheer, E.K., Gavrilov, A.N., Sea Ice Mechanics and Arctic Modeling Workshop, Anchorage, AK, Apr. 25-28, 1995. Proceedings. Vol.1, Bellevue, WA, Northwest Research Associates, Inc., 1995, p.24-33, 33 refs.

Ice acoustics, Ice water interface, Underwater acoustics, Oceanographic surveys, Water temperature, Marine atmospheres, Polar atmospheres, Global warming

50-6274

Sea ice failure mechanisms.

Pritchard, R.S., Sea Ice Mechanics and Arctic Modeling Workshop, Anchorage, AK, Apr. 25-28, 1995. Proceedings. Vol.1, Bellevue, WA, Northwest Research Associates, Inc., 1995, p.34-40, 5 refs.

Ice deformation, Ice breaking, Ice cracks, Ice openings, Ice override, Pressure ridges, Ice friction, Ice loads, Ice acoustics

50-6275

Sea ice mechanics research: tomographic imaging of wave speeds and acoustic emission event localization.

Rajan, S.D., Sea Ice Mechanics and Arctic Modeling Workshop, Anchorage, AK, Apr. 25-28, 1995. Proceedings. Vol.1, Bellevue, WA, Northwest Research Associates, Inc., 1995, p.41-50, 6 refs.

Ice deformation, Ice breaking, Ice cracks, Pressure ridges, Ice acoustics, Icequakes

50-6276

Seismo-acoustic remote sensing of ice-mechanical processes in the Arctic.

Schmidt, H., Baggeroer, A.B., Dyer, I., Von der Heydt, K., Scheer, E.K., Sea Ice Mechanics and Arctic Modeling Workshop, Anchorage, AK, Apr. 25-28, 1995. Proceedings. Vol.1, Bellevue, WA, Northwest Research Associates, Inc., 1995, p.51-61, 27 refs.

Ice deformation, Ice cracks, Ice breaking, Ice openings, Ice friction, Ice acoustics, Icequakes, Telemetering equipment, Data transmission

50-6277

SIMI winter-over geophone/hydrophone system.

Stein, P.J., Andersen, D.W., Bahlavouni, A., Euerle, S.E., Santos, G.M., Menoche, R.K., Sea Ice Mechanics and Arctic Modeling Workshop, Anchorage, AK, Apr. 25-28, 1995. Proceedings. Vol.1, Bellevue, WA, Northwest Research Associates, Inc., 1995, p.62-71, 4 refs.

Ice cover strength, Ice deformation, Ice cracks, Ice breaking, Ice acoustics, Underwater acoustics, Seismic surveys, Telemetering equipment

50-6278

Effect of size on distributed damage and fracture of sea ice.

Bažant, Z.P., Li, Y.N., Jirásek, M., Li, Z.Z., Kim, J.J., Sea Ice Mechanics and Arctic Modeling Workshop, Anchorage, AK, Apr. 25-28, 1995. Proceedings. Vol.1, Bellevue, WA, Northwest Research Associates, Inc., 1995, p.73-83, 22 refs.

Ice cover strength, Ice loads, Ice deformation, Ice pressure, Ice breaking, Ice cracks, Crack propagation, Stress concentration, Computerized simulation

50-6279

Scale effects on the fracture and constitutive behavior of sea ice.

Dempsey, J.P., Adamson, R.M., Sea Ice Mechanics and Arctic Modeling Workshop, Anchorage, AK, Apr. 25-28, 1995. Proceedings. Vol.1, Bellevue, WA, Northwest Research Associates, Inc., 1995, p.84-99, 15 refs.

Ice cover strength, Ice structure, Ice loads, Ice deformation, Ice breaking, Ice cracks, Crack propagation

50-6280

Field and laboratory experiments and modeling of the constitutive behavior of sea ice.

Cole, D.M., MP 3873, Sea Ice Mechanics and Arctic Modeling Workshop, Anchorage, AK, Apr. 25-28, 1995. Proceedings. Vol.1, Bellevue, WA, Northwest Research Associates, Inc., 1995, p.101-109, 8 refs.

Salt ice, Ice cover strength, Ice structure, Ice loads, Ice pressure, Ice elasticity, Ice deformation, Ice creep, Ice models, Mathematical models

50-6281

Crack nucleation mechanisms in columnar ice—recent developments.

Gupta, V., Picu, R.C., Bergström, J., Frost, H.J., Sea Ice Mechanics and Arctic Modeling Workshop, Anchorage, AK, Apr. 25-28, 1995. Proceedings. Vol.1, Bellevue, WA, Northwest Research Associates, Inc., 1995, p.110-121, 20 refs.

Ice cover strength, Ice structure, Ice loads, Ice pressure, Ice deformation, Ice breaking, Ice cracks, Crack propagation

50-6282

Compressive failure of columnar saline ice under multiaxial loading.

Schulson, E.M., Sea Ice Mechanics and Arctic Modeling Workshop, Anchorage, AK, Apr. 25-28, 1995. Proceedings. Vol.1, Bellevue, WA, Northwest Research Associates, Inc., 1995, p.122-140, 34 refs.

Salt ice, Ice structure, Ice cover strength, Ice loads, Ice pressure, Ice deformation, Ice creep, Ice breaking, Mathematical models

50-6283

Studies of the influence of fabric and structure on the flexural strength of sea ice and of the consolidation of first-year pressure ridges.

Shapiro, L.H., Weeks, W.F., Harrison, W.D., Sea Ice Mechanics and Arctic Modeling Workshop, Anchorage, AK, Apr. 25-28, 1995. Proceedings. Vol.1, Bellevue, WA, Northwest Research Associates, Inc., 1995, p.141-149, 3 refs.

Ice structure, Ice cover strength, Ice cover thickness, Ice loads, Ice pressure, Ice deformation, Pressure ridges, Flexural strength

50-6284

Sea ice mechanics research.

Coon, M.D., Echert, D.C., Knoke, G.S., Sea Ice Mechanics and Arctic Modeling Workshop, Anchorage, AK, Apr. 25-28, 1995. Proceedings. Vol.1, Bellevue, WA, Northwest Research Associates, Inc., 1995, p.151-159, 5 refs.

Ice cover strength, Ice loads, Ice pressure, Ice friction, Ice deformation, Ice override, Pressure ridges, Research projects

50-6285

SIMI GPS position and CTD cast data.

O'Hara, S., Ardai, J., Jr., Sea Ice Mechanics and Arctic Modeling Workshop, Anchorage, AK, Apr. 25-28, 1995. Proceedings. Vol.1, Bellevue, WA, Northwest Research Associates, Inc., 1995, p.160-167.

Drift stations, Drift, Oceanographic surveys, Geodetic surveys

50-6286

Regional and floe-floe deformation.

Overland, J.E., Salo, S., Li, S., McNutt, L., Sea Ice Mechanics and Arctic Modeling Workshop, Anchorage, AK, Apr. 25-28, 1995. Proceedings. Vol.1, Bellevue, WA, Northwest Research Associates, Inc., 1995, p.168-177, 18 refs.

Ice surveys, Sea ice distribution, Ice floes, Ice cover strength, Ice deformation, Drift, Drift stations, Spaceborne photography

50-6287

Pack ice stresses and their relationship to regional deformation.

Richter-Menge, J.A., Elder, B.C., Tucker, W.B., Perovich, D.K., MP 3874, Sea Ice Mechanics and Arctic Modeling Workshop, Anchorage, AK, Apr. 25-28, 1995. Proceedings. Vol.1, Bellevue, WA, Northwest Research Associates, Inc., 1995, p.178-187, 13 refs.

Pack ice, Ice floes, Ice cover strength, Ice loads, Ice pressure, Ice friction, Ice deformation, Stress concentration, Strain measuring instruments

50-6288

Physically based constitutive modeling of ice.

Connor, J.J., Shyam Sunder, S., Elvin, A., Choi, D.H., Kim, J.K., Sea Ice Mechanics and Arctic Modeling Workshop, Anchorage, AK, Apr. 25-28, 1995. Proceedings. Vol.1, Bellevue, WA, Northwest Research Associates, Inc., 1995, p.189-198, 9 refs.

Ice structure, Ice cover strength, Ice loads, Ice pressure, Ice deformation, Ice cracks, Ice creep, Ice models, Computerized simulation

50-6289

Numerical simulation of arctic pressure ridging.

Hopkins, M.A., MP 3875, Sea Ice Mechanics and Arctic Modeling Workshop, Anchorage, AK, Apr. 25-28, 1995. Proceedings. Vol.1, Bellevue, WA, Northwest Research Associates, Inc., 1995, p.199-208, 8 refs.

Ice cover strength, Ice loads, Ice pressure, Ice friction, Ice deformation, Ice override, Pressure ridges, Ice models, Mathematical models, Computerized simulation

50-6290

Sea ice mechanics related to thermally-induced stresses and fracturing in pack ice.

Lewis, J.K., Stein, P.J., Sea Ice Mechanics and Arctic Modeling Workshop, Anchorage, AK, Apr. 25-28, 1995. Proceedings. Vol.1, Bellevue, WA, Northwest Research Associates, Inc., 1995, p.209-215, 4 refs.

Pack ice, Ice cover strength, Ice deformation, Ice loads, Ice pressure, Ice cracks, Ice creep, Ice breaking, Thermal stresses

50-6291

Measurements of crack velocity in sea ice using electromagnetic techniques.

Petrenko, V.F., Gluschenkov, O.V., Sea Ice Mechanics and Arctic Modeling Workshop, Anchorage, AK, Apr. 25-28, 1995. Proceedings. Vol.1, Bellevue, WA, Northwest Research Associates, Inc., 1995, p.216-225, 31 refs.

Ice cover strength, Ice deformation, Ice loads, Ice friction, Ice breaking, Ice cracks, Crack propagation, Ice electrical properties, Electrical measurement

50-6292

Constitutive equations and fracture models for sea ice.

Rodin, G.J., Schapery, R.A., Abdel-Tawab, K., Wang, L., Sea Ice Mechanics and Arctic Modeling Workshop, Anchorage, AK, Apr. 25-28, 1995. Proceedings. Vol.1, Bellevue, WA, Northwest Research Associates, Inc., 1995, p.226-235, 7 refs.

Ice structure, Ice cover strength, Ice elasticity, Ice loads, Ice friction, Ice deformation, Ice creep, Ice cracks, Ice breaking, Mathematical models

50-6293

Physically-based constitutive modeling of ice: damage and failure.

Wu, M.S., Niu, J., Zhang, Y., Zhou, H., Sea Ice Mechanics and Arctic Modeling Workshop, Anchorage, AK, Apr. 25-28, 1995. Proceedings. Vol.1, Bellevue, WA, Northwest Research Associates, Inc., 1995, p.236-245, 7 refs.

Ice microstructure, Ice cover strength, Ice loads, Ice pressure, Ice friction, Ice deformation, Ice cracks, Ice breaking

50-6294

Sea Ice Mechanics Initiative (SIMI) summary plan, FY94-95. Sea Ice Mechanics and Arctic Modeling Workshop, Anchorage, AK, Apr. 25-28, 1995. Proceedings. Vol.1, Bellevue, WA, Northwest Research Associates, Inc., 1995, 21p., Included as Appendix B. 6 refs. Reprint of a paper presented at a workshop in Sidney, British Columbia, Aug. 1993.

Research projects, Ice structure, Ice cover strength, Ice loads, Ice pressure, Ice friction, Ice deformation, Ice cracks, Ice breaking

50-6295

Panel report on 100 km scale (pack ice).

Coon, M.D., Preller, R., Proshutinskiĭ, A.IU., Sea Ice Mechanics and Arctic Modeling Workshop, Anchorage, AK, Apr. 25-28, 1995. Proceedings. Vol.2, Bellevue, WA, Northwest Research Associates, Inc., 1995, p.10-15, 6 refs.

Pack ice, Ice cover strength, Ice loads, Ice pressure, Ice friction, Ice deformation, Ice cracks, Ice openings

50-6296

Panel report on the 10 km scale—floe cluster.

Overland, J.E., Kerman, B.R., Richter-Menge, J.A., Cox, G., MP 3876, Sea Ice Mechanics and Arctic Modeling Workshop, Anchorage, AK, Apr. 25-28, 1995. Proceedings. Vol.2, Bellevue, WA, Northwest Research Associates, Inc., 1995, p.16-21.

Ice floes, Ice cover strength, Ice loads, Ice pressure, Ice friction, Ice deformation, Research projects

50-6297

Report of the 1-km-scale panel.

Hopkins, M.A., Schmidt, H., MP 3877, Sea Ice Mechanics and Arctic Modeling Workshop, Anchorage, AK, Apr. 25-28, 1995. Proceedings. Vol.2, Bellevue, WA, Northwest Research Associates, Inc., 1995, p.22-27.

Research projects, Ice floes, Ice cover strength, Ice loads, Ice pressure, Ice friction, Ice deformation, Pressure ridges, Ice cracks

50-6298

10 meter scale (macro-crack): scale effects on the fracturing of sea ice.

Dempsey, J.P., Bugno, W., Stein, P.J., Bažant, Z.P., Sea Ice Mechanics and Arctic Modeling Workshop, Anchorage, AK, Apr. 25-28, 1995. Proceedings. Vol.2, Bellevue, WA, Northwest Research Associates, Inc., 1995, p.28-44, 14 refs.

Ice cover strength, Ice loads, Ice pressure, Ice friction, Ice deformation, Ice cracks, Ice breaking, Stress concentration

50-6299

SIMI workshop panel on the 1cm-1m (materials) scale.

Schulson, E.M., Cole, D.M., Thomas, G.A.N., Smirnov, V.N., MP 3878, Sea Ice Mechanics and Arctic Modeling Workshop, Anchorage, AK, Apr. 25-28, 1995. Proceedings. Vol.2, Bellevue, WA, Northwest Research Associates, Inc., 1995, p.45-59, 13 refs.

Research projects, Ice structure, Ice cover strength, Ice loads, Ice pressure, Ice friction, Ice deformation, Ice cracks, Ice breaking, Stress concentration

50-6300

Ice loads on fixed and floating structures: panel report.

Croasdale, K.R., Truskov, P.A., Bekker, A.T., Murrell, T., Sea Ice Mechanics and Arctic Modeling Workshop, Anchorage, AK, Apr. 25-28, 1995. Proceedings. Vol.2, Bellevue, WA, Northwest Research Associates, Inc., 1995, p.60-78, 12 refs.

Research projects, Ice solid interface, Ice cover strength, Ice loads, Ice pressure, Ice friction, Ice deformation, Ice breaking, Offshore structures

50-6301

Sea ice forecasting for ship routing and operations.

Pritchard, R.S., Polomoshnov, A.M., Danielewicz, B.W., Monkelien, K., Sea Ice Mechanics and Arctic Modeling Workshop, Anchorage, AK, Apr. 25-28, 1995. Proceedings. Vol.2, Bellevue, WA, Northwest Research Associates, Inc., 1995, p.79-83.

Research projects, Ice forecasting, Ice navigation, Ice routing

50-6302

Sea ice induced gouging of the sea floor.

Weeks, W.F., Wang, A., Woodward-Lynas, C., Riabinin, V.E., Sea Ice Mechanics and Arctic Modeling Workshop, Anchorage, AK, Apr. 25-28, 1995. Proceedings. Vol.2, Bellevue, WA, Northwest Research Associates, Inc., 1995, p.84-96, 21 refs.

Research projects, Pressure ridges, Ice bottom surface, Ice erosion, Ice scoring, Ocean bottom

50-6303

Application of ice cover mechanics in design and operations of marine structures.

Riska, K., Tuhkuri, J., Sea Ice Mechanics and Arctic Modeling Workshop, Anchorage, AK, Apr. 25-28, 1995. Proceedings. Vol.2, Bellevue, WA, Northwest Research Associates, Inc., 1995, p.123-134, 21 refs.

Ice solid interface, Ice loads, Ice pressure, Ice friction, Ice deformation, Ice cover strength, Ships, Offshore structures

50-6304

Ice-structure interaction research and arctic development.

Kennedy, K.P., Fitzpatrick, P.J., Hewitt, K.J., Danielewicz, B.W., Sea Ice Mechanics and Arctic Modeling Workshop, Anchorage, AK, Apr. 25-28, 1995. Proceedings. Vol.2, Bellevue, WA, Northwest Research Associates, Inc., 1995, p.135-140, 3 refs.

Ice solid interface, Ice loads, Ice pressure, Ice friction, Ice cover strength, Ice deformation, Offshore structures, Offshore drilling, Economic development, Cost analysis, Beaufort Sea

50-6305

Review of select exploration and development activity in state nearshore areas.

Hansen, J., Sea Ice Mechanics and Arctic Modeling Workshop, Anchorage, AK, Apr. 25-28, 1995. Proceedings. Vol.2, Bellevue, WA, Northwest Research Associates, Inc., 1995, p.145-174.

Offshore drilling, Exploration, Petroleum industry, Economic development, Environmental protection, Legislation, Cost analysis, United States—Alaska—North Slope, Beaufort Sea

50-6306

Ice surface oscillation measurements on SIMI using strain, heave and tilt sensors.

Wadhams, P., Wells, S.C.S., Sea Ice Mechanics and Arctic Modeling Workshop, Anchorage, AK, Apr. 25-28, 1995. Proceedings. Vol.2, Bellevue, WA, Northwest Research Associates, Inc., 1995, p.176-189, 1 ref.

Ocean waves, Ice water interface, Ice cover strength, Ice elasticity, Ice pressure, Pressure ridges, Ice deformation, Strain measuring instruments

50-6307

AUV operations in the Arctic.

Bellingham, J.G., et al, Sea Ice Mechanics and Arctic Modeling Workshop, Anchorage, AK, Apr. 25-28, 1995. Proceedings. Vol.2, Bellevue, WA, Northwest Research Associates, Inc., 1995, p.190-198, 23 refs.

Ice surveys, Ice bottom surface, Ice water interface, Subglacial observations, Subglacial navigation, Submarines

50-6308

Multipath navigation in the Arctic: a feasibility test.

Deffenbaugh, M., Schmidt, H., Bellingham, J.G., Sea Ice Mechanics and Arctic Modeling Workshop, Anchorage, AK, Apr. 25-28, 1995. Proceedings. Vol.2, Bellevue, WA, Northwest Research Associates, Inc., 1995, p.199-203, 2 refs.

Subglacial navigation, Ice acoustics, Underwater acoustics, Submarines

50-6309

Performance assessment of the high resolution GPS ranging system.

Deffenbaugh, M., Schmidt, H., Bellingham, J.G., Atwood, D.K., Sea Ice Mechanics and Arctic Modeling Workshop, Anchorage, AK, Apr. 25-28, 1995. Proceedings. Vol.2, Bellevue, WA, Northwest Research Associates, Inc., 1995, p.204-206, 2 refs.

Drift stations, Drift, Geodetic surveys, Telemetering equipment, Spacecraft

50-6310

Coupled ice-ocean-atmosphere model of the Bering Sea.

Hedstrom, K.S., Sea Ice Mechanics and Arctic Modeling Workshop, Anchorage, AK, Apr. 25-28, 1995. Proceedings. Vol.2, Bellevue, WA, Northwest Research Associates, Inc., 1995, p.230-238, 8 refs.

Air ice water interaction, Sea ice distribution, Ice cover effect, Ice heat flux, Polar atmospheres, Marine atmospheres, Atmospheric circulation, Computerized simulation, Bering Sea

50-6311

Information states in sea ice imagery: constitutive relationships for SAR imagery.

Kerman, B.R., Sea Ice Mechanics and Arctic Modeling Workshop, Anchorage, AK, Apr. 25-28, 1995. Proceedings. Vol.2, Bellevue, WA, Northwest Research Associates, Inc., 1995, p.239-248, 5 refs.

Ice surveys, Ice detection, Spaceborne photography, Synthetic aperture radar, Image processing

50-6312

Planned NSF/UNOLS arctic research vessel for the United States arctic science community.

Kristensen, D.H., Alexander, V., Royer, T., Elsner, R., Sea Ice Mechanics and Arctic Modeling Workshop, Anchorage, AK, Apr. 25-28, 1995. Proceedings. Vol.2, Bellevue, WA, Northwest Research Associates, Inc., 1995, p.249-261, 9 refs.

Icebreakers, Oceanographic ships, Ice navigation, Oceanographic surveys, Research projects

50-6313

Arctic Ocean ice and water transport during 1946-1988.

Proshutinskiĭ, A.IU., Johnson, M., Sea Ice Mechanics and Arctic Modeling Workshop, Anchorage, AK, Apr. 25-28, 1995. Proceedings. Vol.2, Bellevue, WA, Northwest Research Associates, Inc., 1995, p.265-275.

Air ice water interaction, Drift, Ocean currents, Water transport, Computerized simulation

50-6314

Marine ice bottom gouging: some mechanisms and an approach to depth evaluation.

Riabinin, V.E., et al, Sea Ice Mechanics and Arctic Modeling Workshop, Anchorage, AK, Apr. 25-28, 1995. Proceedings. Vol.2, Bellevue, WA, Northwest Research Associates, Inc., 1995, p.276-285, 2 refs.

Ice scoring, Ice erosion, Ocean bottom, Bottom topography, Russia—Kara Sea, Russia—Baydaratskaya Bay

50-6315

Physical processes in ice cover.

Smirnov, V.N., Korostelev, V.G., Sea Ice Mechanics and Arctic Modeling Workshop, Anchorage, AK, Apr. 25-28, 1995. Proceedings. Vol.2, Bellevue, WA, Northwest Research Associates, Inc., 1995, p.288-296, 4 refs.

Ice cover strength, Ice loads, Ice pressure, Ice friction, Ice elasticity, Ice deformation

50-6316

Ice studies on the northern Sakhalin offshore.

Truskov, P.A., Polomoshnov, A.M., Sea Ice Mechanics and Arctic Modeling Workshop, Anchorage, AK, Apr. 25-28, 1995. Proceedings. Vol.2, Bellevue, WA, Northwest Research Associates, Inc., 1995, p.297-309, 27 refs.

Ice surveys, Sea ice distribution, Drift, Ice cover strength, Ice scoring, Offshore drilling, Russia—Sakhalin Island, Okhotsk Sea

50-6317

Instruments for coring, structure and composition analysis and monitoring sea ice.

Zagorodnov, V.S., Kelley, J.J., Sea Ice Mechanics and Arctic Modeling Workshop, Anchorage, AK, Apr. 25-28, 1995. Proceedings. Vol.2, Bellevue, WA, Northwest Research Associates, Inc., 1995, p.311-318, 14 refs.

Ice sampling, Core samplers, Ice coring drills, Augers, Ice structure, Ice composition

50-6318

Reconstruction of the late Palaeozoic ice sheet on southwestern Gondwana.

Visser, J.N.J., Gondwana Symposium, 8th, Hobart, TAS, Australia, June 21-24, 1991. Proceedings. Gondwana eight: assembly, evolution and dispersal, edited by R.H. Findlay, R. Unrug, M.R. Banks, and J.J. Veevers, Brookfield, VT, A.A. Balkema Publishers, 1993, p.449-458, Refs. p.456-458.

Glacial erosion, Ice sheets, Ice formation, Glaciation, Tectonics, Sea level, Continental drift, Paleoclimatology

Analysis of the palaeogeography, spatial and temporal distribution of glacial erosion features and lithofacies, and plate tectonic history of the region enables the reconstruction of the Permo-Carboniferous ice sheet at specific time intervals on southwestern Gondwana. During the Early to Mid-Carboniferous, small mountain ice centers formed along the northern sector of the tectonic arc and in South America. Growth of ice centers in South America, Africa and Antarctica since the Mid-Carboniferous resulted in the formation of a supercontinental ice sheet having dimensions of about 10,000 by 7,000 km. The major ice-spreading center straddled Africa and Antarctica. Large sections of South America and part of the Sowegon basin became ice free during the Early Permian. Sea-level and climatic changes at the end of the Early Permian caused the collapse of the ice sheet and only small highland ice caps were maintained in Africa and possibly Antarctica in the Late Permian. (Auth.)

50-6319

Isotope composition of the ice and sub-glacial geology near the Allan Hills, Victoria Land, Antarctica.

Faure, G., Wehn, K.S., Montello, J.M., Hagen, E.H., Strobel, M.L., Johnson, K.S., Gondwana Symposium, 8th, Hobart, TAS, Australia, June 21-24, 1991. Proceedings. Gondwana eight: assembly, evolution and dispersal, edited by R.H. Findlay, R. Unrug, M.R. Banks, and J.J. Veevers, Brookfield, VT, A.A. Balkema Publishers, 1993, p.485-495, Refs. p.493-494.

Glacial geology, Subglacial observations, Moraines, Ice sheets, Flow measurement, Sediment transport, Ice composition, Isotopes, Antarctica—Allan Hills

Rock clasts and sediment deposited by the east antarctic ice sheet in supraglacial moraines and along the ice edge can provide information about the subglacial geology of East Antarctica. Such studies are enhanced by using the isotope composition of the ice to constrain its provenance. The $\delta^{18}O$ values of ice collected at regular intervals along surveyed lines near the Elephant and Reckling moraines on the east antarctic ice sheet west of Victoria Land range from -42.6 to -50.4 per mill relative to standard mean ocean water (SMOW). Ice adjacent to the Allan Hills has a significantly different isotope composition, with $\delta^{18}O$ values between -35.2 and 042.0 per mill. These results indicate that the ice presently exposed at the Elephant and Reckling moraines originated from the eastern slope of the central ice divide in East Antarctica. The less negative $\delta^{18}O$ values of the ice at the Allan Hills indicate either that the ice originated from a local source close to the Transantarctic Mountains or that it formed during an interglacial stage of the Pleistocene epoch, whereas at least some of the ice at the Elephant and Reckling moraines formed during glacial stages. (Auth. mod.)

50-6320

Atlas of Arctic icebergs; the Greenland, Barents, Kara, Laptev, East-Siberian and Chukchi Seas and the Arctic Basin.

Abramov, V., New York, Backbone Publishing Company, 1996, 70p., 28 refs.

Icebergs, Maps, Data processing, Greenland Sea, Barents Sea, Chukchi Sea, Russia—Kara Sea, Russia—Laptev Sea, Russia—East Siberian Sea

50-6321

Estimating the mean annual primary production and outflow of organic carbon in Antarctica. [Otsenka srednegodovykh velichin pervichnoĭ produktsii i eksportnogo potoka organicheskogo ugleroda v Antarktike]

Tseĭtlin, V.B., *Rossiĭskaia akademiia nauk. Doklady,* Nov. 1995, 345(3), p.401-403, In Russian. 13 refs.

Biomass, Marine biology, Plankton, Analysis (mathematics), Antarctica

The aim of this work was to estimate the mean annual values of primary productivity and, related to it, the outflow of organic carbon from the upper 100-m zone in the southern ocean. Data on seasonal variations in the biomass of antarctic zooplankton were used in the calculations. Assuming a section of the antarctic zone of the southern ocean equal to $38 \cdot 10^6$ km^2, its annual primary productivity is approximately $1.7 \cdot 10^9$ tC, while the organic flow is $0.29 \cdot 10^9$ tC. (Auth. mod.)

50-6322

Atlas of ice and snow of the Arctic Basin and Siberian shelf seas. 2nd edition, revised and expanded.

Romanov, I.P., New York, Backbone Publishing Company, 1995, 277p. + 3.5" diskette of data (ASCII *.TXT), 50 refs.

Sea ice, Ice conditions, Snow ice, Seasonal freeze thaw, Freeze thaw cycles, Drift, Ice cover thickness, Hummocks, Pressure ridges, Data processing, Sastrugi, Icebergs, Icebreakers, Ice navigation, Ice runways, Arctic Ocean, Russia—Wrangel Island, Russia—Siberia, Greenland, United States—Alaska, Canada

50-6323

Ultratransparent antarctic ice as a supernova detector.

Halzen, F., Jacobsen, J.E., Zas, E., *Physical review D,* June 15, 1996, 53(12), p.7359-7361, 13 refs.

Gamma irradiation, Ice sheets, Luminescence, Ice optics, Radiation absorption, Light scattering, Detection, Mathematical models

The authors have simulated the response of a high energy neutrino telescope in deep antarctic ice to the stream of low energy neutrinos produced by a supernova. The passage of a large flux of MeV-energy neutrinos during a period of seconds will be detected as an excess of single counting rates in all individual optical modules. The authors update here a previous estimate of the performance of such an instrument, taking into account the recent discovery of absorption lengths of several hundred meters for near-UV photons in natural deep ice. The existing AMANDA detector thus can, even by the most conservative estimates, act as a galactic supernova watch. (Auth. mod.)

50-6324

Coupling PIXE and SEM/EDAX for characterizing atmospheric aerosols in ice-cores.

Laj, P., Ghermandi, G., Cecchi, R., Ceccato, D., *Nuclear instruments and methods in physics research B,* Apr. 1996, Vol.109-110, International Conference on PIXE and its Analytical Applications, 7th, Padua, Italy, May 26-30, 1995. Proceedings, p.252-257, 22 refs.

Paleoclimatology, Atmospheric composition, Aerosols, Solubility, Polar atmospheres, Snow composition, Ice sheets, Ice cores, Sampling, X ray analysis, Geochemical cycles

Understanding temporal and spatial fluctuations related to changing environmental conditions is a key step in assessing future climatic change. The atmosphere's chemical constituents are deposited onto polar ice sheets, and conserved by accumulation of snow layers. Drillings in Greenland and Antarctica have provided long-term records of atmospheric constituents spanning the last 150,000 years. Within the framework of the Greenland Ice Core Project (GRIP), the authors have developed a methodology coupling PIXE to SEM-EDAX analysis for the characterization of the aerosols deposited in polar precipitation. This paper presents initial results on soluble/insoluble speciation for both antarctic and Greenland samples. The study provides new information in the interpretation of ice core paleo-environmental records. (Auth. mod.)

50-6325

Rain production in convective clouds as simulated in an axisymmetric model with detailed microphysics. Part 2: effects of varying drops and ice initiation.

Reisin, T., Levin, Z., Tzivion, S., *Journal of the atmospheric sciences,* July 1, 1996, 53(13), p.1815-1837, 27 refs.

Clouds (meteorology), Precipitation (meteorology), Cloud physics, Convection, Cloud droplets, Condensation nuclei, Ice nuclei, Snow pellets, Ice water interface, Ice crystal growth, Ice nuclei, Distribution, Hydrodynamics, Mathematical models, Simulation

50-6326

Atmospheric aerosol turbidity over polar regions.

Radionov, V.F., Marshunova, M.S., Rusina, E.N., Lubo-Lesnichenko, K.E., Pimanova, IU.E., *Izvestiya. Atmospheric and oceanic physics,* June 1995, 30(6), p.762-766, Translated from Izvestiia. Fizika atmosfery i okeana. 11 refs.

Climatology, Polar atmospheres, Atmospheric composition, Atmospheric density, Aerosols, Air pollution, Turbidity, Light transmission, Optical properties, Statistical analysis

The authors consider aerosol-optical characteristics of the atmosphere on the basis of observations carried out at various arctic stations (Tikhaya Bay, Dikson I., Severnaya Zemlya, Kotel'nyy I.) and at Mirnyy Observatory in the Antarctic. The observational data show that the level of aerosol pollution in the Antarctic is usually very low, while in the Arctic the spring level of pollution is comparable with that in the middle latitudes. (Auth. mod.)

50-6327

Peroxide concentrations in the Dome Summit South ice core, Law Dome, Antarctica.

van Ommen, T.D., Morgan, V., *Journal of geophysical research,* June 27, 1996, 101(D10), p.15,147-15,152, 18 refs.

Climatology, Atmospheric composition, Climatic changes, Ice cores, Snow composition, Vapor transfer, Chemical analysis, Isotope analysis, Snow air interface, Seasonal variations, Sampling, Antarctica—Law Dome

Measurements of H_2O_2 concentrations have been made at intervals along the full length of the Dome Summit South ice core from Law Dome. These results show mean peroxide concentrations of approximately 37 parts per billion by mass over the past 4 kyr and a tendency for concentrations to decrease with age. The rate of H_2O_2 decay in antarctic ice appears slower than in Greenland ice and the pattern of measurements suggests an abrupt increase in concentration during the emergence from the last glacial into the Holocene. Detailed examination of the timing of the seasonality in H_2O_2 and $\delta^{18}O$ shows that peroxide extrema occur very near the solstices. The seasonal curves have been used to derive atmospheric seasonal H_2O_2 curves based on possible air-snow partitioning models. These show a broad low in atmospheric concentration with a sharp peak which is again very near the summer solstice. (Auth. mod.)

50-6328

Surface atmosphere layer ozone concentration over the Atlantic Ocean and the Weddell Sea.

Elanskiĭ, N.F., Markova, T.A., *Izvestiya. Atmospheric and oceanic physics,* June 1995, 31(1), p.85-96, Translated from Izvestiia. Fizika atmosfery i okeana. 27 refs.

Climatology, Polar atmospheres, Atmospheric boundary layer, Air masses, Ozone, Atmospheric composition, Air ice water interaction, Ice cover effect, Wind factors, Sampling, Antarctica—Weddell Sea

The results of ozone concentration measurements in an atmospheric surface layer carried out from on board the research vessel *Akademik Fedorov* during Aug.-Nov. 1989 are presented. The characteristics of ozone distribution in the mid-latitudes and tropics of the Atlantic Ocean are analyzed. Low values of the ozone concentration were observed over the Weddell Sea inside the polar vortex. Day-to-day ozone variations are connected here with a migration of the vortex boundary, the passage of synoptic-scale eddies, and air advection from the mid-latitudes and Antarctica. No sharp drops are observed in the ozone concentration in the spring period, as are usually observed in the north polar region and connected with the action of bromorganic compounds. (Auth. mod.)

50-6329

Theory of inelastic x-ray scattering by phonons in ice.

Johansson, P., *Physical review B,* Aug. 1, 1996, 54(5), p.2988-2991, 14 refs.

Ice physics, X ray analysis, Ice crystal optics, Scattering, Wave propagation, Molecular structure, Spectra, Molecular energy levels, Vibration, Ice models, Analysis (mathematics)

50-6330

Formation of ice between hydrotalcite particles measured by thermoporometry.

Titulaer, M.K., Talsma, H., Jansen, J.B.H., Geus, J.W., *Clay minerals,* June 1996, 31(2), p.263-277, 34 refs.

Soil chemistry, Soil physics, Clay minerals, Porosity, Ice formation, Ice crystal growth, Ice water interface, Interstitial ice, Ion exchange, Molecular structure, Permeability, Absorption

50-6331

On the age of stratospheric air and inorganic chlorine and bromine release.

Daniel, J.S., et al, *Journal of geophysical research,* July 20, 1996, 101(D11), p.16,757-16,770, 29 refs.

Climatology, Polar atmospheres, Stratosphere, Atmospheric composition, Aerosols, Age determination, Sampling, Statistical analysis, Origin

50-6332

Effect of dynamical mixing in a simple model of the ozone hole.

Edouard, S., Legras, B., Zeitlin, V., *Journal of geophysical research,* July 20, 1996, 101(D11), p.16,771-16,778, 28 refs.

Climatology, Polar atmospheres, Stratosphere, Atmospheric composition, Ozone, Aerosols, Degradation, Turbulent diffusion, Mathematical models, Chemical analysis

The role of the horizontal dynamical mixing on the ozone destruction by chlorine in the antarctic polar stratosphere is investigated, using a one-dimensional high-resolution model to represent the microstructure of chemical species distribution on which the effective reactivity depends. The chemical model is idealized by only considering two species, ozone and chlorine. Ozone destruction is proportional to the square of chlorine content. The authors compare the effects of a chaotic type of mixing, represented as a Bernoulli map over the unit interval, with purely diffusive mixing, which is used in most parameterizations of turbulence. Owing to the nonlinearity of the chemical reaction, reactivity decreases with mixing if the chemical constant is small, while it increases with mixing for large values of the chemical constant. In any situation, large discrepancies in the ozone destruction are observed between chaotic and diffusive mixing, indicating the need for a better representation of the mixing processes in studies of stratospheric chemistry. (Auth. mod.)

50-6333

Evolution of temperature and salt structure of Lake Bonney, a chemically stratified antarctic lake.

Spigel, R.H., Priscu, J.C., *Hydrobiologia,* Mar. 22, 1996, 321(3), p.177-190, 34 refs.

Limnology, Icebound lakes, Ice cover effect, Meltwater, Salinity, Water temperature, Water level, Stratification, Ion density (concentration), Sampling, Statistical analysis, Thermal analysis, Seasonal variations, Antarctica—Bonney, Lake

50-6334

Buoys in the Arctic study heat exchange.

Honjo, S.S., et al, *Earth in space,* Feb. 1996, 8(6), p.12-13.

Marine atmospheres, Climatology, Global change, Air ice water interaction, Heat transfer, Climatic changes, Drift stations, Telemetering equipment, Subglacial observations, Design, Education, Arctic Ocean

50-6335

Bistatic scattering of radiowaves by a melting layer of precipitation.

Zhang, W., Salonen, E.T., *IEEE transactions on antennas and propagation,* Aug. 1996, 44(8), p.1057-1062, 31 refs.

Precipitation (meteorology), Falling snow, Snow melting, Remote sensing, Radar echoes, Backscattering, Reflectivity, Cloud droplets, Wave propagation, Polarization (waves)

50-6336

Comment on "A rigorous explanation for the resonances observed in the scattering from spherical ice particles".

Hill, S.C., Chylek, P., Papatsoris, A.D., Watson, P.A., *IEEE transactions on antennas and propagation,* July 1996, 44(7), p.1052-1055, 74 refs. For pertinent paper see 49-887.

Precipitation (meteorology), Ice crystal optics, Radar echoes, Backscattering, Resonance, Ice dielectrics, Particles, Spheres

50-6337

Under cover transport and accumulation of frazil granules—discussion.

Quo, Q.Z., Shen, H.T., Wang, D.S., *Journal of hydraulic engineering,* Aug. 1996, 122(8), p.473-474, 4 refs. For pertinent paper see 49-3539.

Hydrodynamics, River flow, River ice, Ice jams, Sediment transport, Frazil ice, Shear stress, Ice bottom surface, Ice water interface, Surface roughness

50-6338

Estimation of mean flow velocity in ice-covered channels—discussion.

Engel, P., et al, *Journal of hydraulic engineering,* Aug. 1996, 122(8), p.474-477, 9 refs. For pertinent paper see 49-1663.

River flow, River ice, Ice water interface, Ice cover effect, Velocity measurement, Analysis (mathematics), Turbulent flow, Hydrography, Profiles

50-6339

Organic geochemistry applied to environmental assessments of Prince William Sound, Alaska, after the *Exxon Valdez* oil spill—a review.

Bence, A.E., Kvenvolden, K.A., Kennicutt, M.C., II, *Organic geochemistry,* Jan. 1996, 24(1), p.7-42, Refs. p.38-42.

Oceanography, Water pollution, Environmental tests, Hydrocarbons, Bottom sediment, Oil spills, Oil recovery, Seepage, Distribution, Geochemistry, Sampling, Environmental impact, United States—Alaska—Prince William Sound

50-6340

Soil thermal contraction in NW Europe related to the dynamics of the Weichselian ice sheet. [Relations entre la contraction thermique des sols en Europe du Nord-Ouest et la dynamique de l'inlandsis weichsélien]

van Vliet-Lanoë, B., *Académie des sciences, Paris. Comptes rendus. Série II,* Mar. 14, 1996, 322(6), p.461-468, In French with English summary. 29 refs.

Pleistocene, Cryoturbation, Permafrost distribution, Degradation, Permafrost indicators, Glacier oscillation, Insolation, Ice wedges, Frost shattering, Diagenesis, Periglacial processes, Wind factors

50-6342

Additions and range extensions to the vascular plant flora of the Northwest Territories, Canada.

Cody, W.J., *Canadian field-naturalist,* Apr.-June 1996, 110(2), p.260-270, 38 refs.

Plants (botany), Distribution, Tundra vegetation, Vegetation patterns, Biogeography, Classifications, Canada—Northwest Territories

50-6343

Alpine base for glacier-regime studies in Uzbekistan.

Konovalov, V.G., *World Meteorological Organization. Bulletin,* Oct. 1993, 42(4), p.342-344.

Glaciology, Research projects, Alpine glaciation, Glacier surveys, Stations, International cooperation, Uzbekistan

50-6344

Inelastic incoherent neutron scattering study of the pressure dependence of ice VII and VIII.

Li, J.C., Adams, M., *Europhysics letters,* June 20, 1996, 34(9), p.675-680, 31 refs.

Ice physics, High pressure ice, Ice spectroscopy, Ice optics, Neutron scattering, Spectra, High pressure tests, Molecular structure, Hydrogen bonds, Orientation, Vibration

50-6345

Fluctuations during melting.

Grimsditch, M., Karpov, V.G., *Journal of physics: condensed matter,* Aug. 12, 1996, 8(33), p.L439-L444, 9 refs.

Ice physics, Crystal growth, Ice melting, Thermodynamics, Surface energy, Phase transformations, Solidification, Liquid phases, Solid phases

50-6346

Time dependence of dislocation arrays in ice during recrystallization.

van der Elsken, J., Bras, W., Dings, J., Michielsen, J.C.F., *Physical review B,* Aug. 1, 1996, 54(5), p.3110-3114, 13 refs.

Ice physics, Recrystallization, X ray analysis, X ray diffraction, Scattering, Ice crystal optics, Spectra, Molecular structure, Orientation, Defects

50-6347

Development of JARE deep ice coring system (III).

Takahashi, A., et al, *Antarctic record,* Mar. 1996, 40(1), p.25-42, In Japanese with English summary. 6 refs.

Coring, Ice coring drills, Low temperature research, Drilling, Design, Instruments

A deep ice coring system for Dome Fuji has been developed under a project coordinated by the National Institute of Polar Research. Three reports have been issued already, mainly about the development of the drill system. The authors report here on the drilling site and equipment such as winch, drilling cable, mast, control panels, chip catching tools (filter) and the drill. This paper includes an outline of drilling site and work, progress of machine design and final specifications of the equipment. (Auth.)

50-6348

Report of the 33rd Japanese Antarctic Research Expedition: Activities of the summer party (1991-1992) and wintering party (1992).

Fukuchi, M., Sano, M., *Antarctic record,* Mar. 1996, 40(1), p.83-123, In Japanese with English summary. 3 refs.

Expeditions, Research projects, Low temperature research, Cold weather construction, Logistics, Sea ice distribution, Meteorological data, Waste disposal, Glaciology

Summer activities in 1991-92 and winter activities in 1992 of the 33rd Japanese Antarctic Research Expedition (JARE) are described. The scientific research programs covered the following 4 major disciplines: upper atmosphere physics—ground-based observations of disturbance and structures of the magnetosphere, and satellite data acquisition; glaciology and meteorology—glaciological studies including radio echo sounding along the oversnow traverse route to the inland dome area; biology and medical science—sea ice ecology and flux study, ecosystem monitoring and physiological adaptation of man to the antarctic cold, and polar psychological tests; and geology and geophysics—geological field work and geophysical observations. (Auth. mod.)

50-6349

Proceedings of the First Conference of Russian Geocryologists, June 3-5, 1996, Moscow State University, Volume 1. [Materialy Pervoĭ konferentsii geokriologov Rossii, 3-5 iiunia 1996 g., MGU im. M.V. Lomonosova, Kniga 1]

Konferentsiia geokriologov Rossii, 1st, Moscow State University, June 3-5, 1996, Moscow, MGU geologicheskiĭ fakul'tet, kafedra geokriologii, 1996, 550p., In Russian. Refs. passim. For individual papers see 50-6350 through 50-6413. Vol.1 contains: Part 1—Historical and regional geocryology; Part 2—Lithogenesis of geocryology; Part 3—Dynamic geocryology.

Geocryology, Glacial geology, Permafrost, Frozen ground, Geothermometry, Russia

50-6350

Analysis of the air temperature in the Holocene using various methods. [Otsenka temperatury vozdukha v golotsene razlichnymi metodami]

Baranova, N.A., Ershov, E.D., Maksimova, L.N., Medvedev, A.V., Materialy Pervoĭ konferentsii geokriologov Rossii, 3-5 iiunia 1996 g., MGU im. M.V. Lomonosova, Kniga 1 (Proceedings of the First Conference of Russian Geocryologists, June 3-5, 1996, Moscow State University, Volume 1), Moscow, MGU geologicheskiĭ fakul'tet, kafedra geokriologii, 1996, p.3-8, In Russian. 11 refs.

Air temperature, Paleoclimatology, Geothermometry, Soil temperature, Frozen ground temperature, Russia

50-6351

Paleogeographic conditions of continental syncryogenesis on Central Yamal. [Paleogeograficheskie usloviia kontinental'nogo sinkriogeneza na Tsentral'nom IAmale]

Bolikhovskaia, N.S., Bolikhovskiĭ, V.F., Materialy Pervoĭ konferentsii geokriologov Rossii, 3-5 iiunia 1996 g., MGU im. M.V. Lomonosova, Kniga 1 (Proceedings of the First Conference of Russian Geocryologists, June 3-5, 1996, Moscow State University, Volume 1), Moscow, MGU geologicheskiĭ fakul'tet, kafedra geokriologii, 1996, p.9-15, In Russian. 5 refs.

Geocryology, Paleoclimatology, Permafrost origin, Permafrost structure, Terraces, Landscape development, Russia—Yamal Peninsula

50-6352

Cryogenic phenomena in the lithosphere as monuments of nature in the system of especially protected natural territories and objects. [Kriogennye iavleniia litosfery kak pamiatniki prirody v sisteme osobo okhraniaemykh prirodnykh territorii i ob"ektov]

Gavrilov, A.V., Chizhov, A.B., Pizhankova, E.I., Nikolaev, S.V., Materialy Pervoĭ konferentsii geokriologov Rossii, 3-5 iiunia 1996 g., MGU im. M.V. Lomonosova, Kniga 1 (Proceedings of the First Conference of Russian Geocryologists, June 3-5, 1996, Moscow State University, Volume 1), Moscow, MGU geologicheskiĭ fakul'tet, kafedra geokriologii, 1996, p.16-23, In Russian.

Geocryology, Ice caves, Environmental protection, Alassy, Lithology, Ice veins, Naleds, Russia

50-6353

Arctic shelf in the last cryogenic epoch of the Late Pleistocene. [Arkticheskiĭ shel'f v poslednuiu kriogennuiu epokhu pozdnego pleĭstotsena]

Danilov, I.D., Materialy Pervoĭ konferentsii geokriologov Rossii, 3-5 iiunia 1996 g., MGU im. M.V. Lomonosova, Kniga 1 (Proceedings of the First Conference of Russian Geocryologists, June 3-5, 1996, Moscow State University, Volume 1), Moscow, MGU geologicheskiĭ fakul'tet, kafedra geokriologii, 1996, p.24-33, In Russian. 12 refs.

Geocryology, Pleistocene, Paleoclimatology, Terraces, Marine geology, Ground ice, Russia

50-6354

Geocryological reconstructions for the central Russian Plain. [Geokriologicheskie rekonstruktsii dlia tsentra Russkoĭ ravniny]

Ershov, E.D., et al, Materialy Pervoĭ konferentsii geokriologov Rossii, 3-5 iiunia 1996 g., MGU im. M.V. Lomonosova, Kniga 1 (Proceedings of the First Conference of Russian Geocryologists, June 3-5, 1996, Moscow State University, Volume 1), Moscow, MGU geologicheskiĭ fakul'tet, kafedra geokriologii, 1996, p.34-41, In Russian. 10 refs.

Geocryology, Paleoclimatology, Lithology, Frozen rock temperature, Mathematical models, Russia

50-6355

New data on the geology and paleogeography of the Late Pliocene-Middle Pleistocene in northern Western Eurasia as the basis for correcting paleocryological concepts. [Novye dannye po geologii i paleogeografii pozdnego pliotsena-srednego pleĭstotsena severa Zapadnoĭ Evrazii kak osnova dlia korrektirovaniia paleokriologicheskikh predstavleniĭ]

Kostiaev, A.G., Materialy Pervoĭ konferentsii geokriologov Rossii, 3-5 iiunia 1996 g., MGU im. M.V. Lomonosova, Kniga 1 (Proceedings of the First Conference of Russian Geocryologists, June 3-5, 1996, Moscow State University, Volume 1), Moscow, MGU geologicheskiĭ fakul'tet, kafedra geokriologii, 1996, p.42-47, In Russian. 8 refs.

Geocryology, Geology, Paleoclimatology, Pleistocene, Climatic factors, Marine geology, Russia

50-6356

Relict sub-thermokarst of the periglacial region in the Quaternary glaciation. [Reliktovyĭ sub-termokarst perigliatsial'noĭ oblasti chetvertichnogo oledeneniia]

Molodykh, I.I., Materialy Pervoĭ konferentsii geokriologov Rossii, 3-5 iiunia 1996 g., MGU im. M.V. Lomonosova, Kniga 1 (Proceedings of the First Conference of Russian Geocryologists, June 3-5, 1996, Moscow State University, Volume 1), Moscow, MGU geologicheskiĭ fakul'tet, kafedra geokriologii, 1996, p.48-54, In Russian.

Geocryology, Periglacial processes, Quaternary deposits, Thermokarst, Russia

50-6357

Relationship between surface and subsurface glaciation on the East European Plain in the Dnepr cold epoch. [O sootnoshenii nazemnogo i podzemnogo oledeneniĭ na Vostochno-Evropeĭskoĭ ravnine v Dneprovskuiu kholodnuiu epokhu]

Nechaev, V.P., Materialy Pervoĭ konferentsii geokriologov Rossii, 3-5 iiunia 1996 g., MGU im. M.V. Lomonosova, Kniga 1 (Proceedings of the First Conference of Russian Geocryologists, June 3-5, 1996, Moscow State University, Volume 1), Moscow, MGU geologicheskiĭ fakul'tet, kafedra geokriologii, 1996, p.55-64, In Russian. 8 refs.

Geocryology, Paleoclimatology, Ground ice, Pleistocene, Permafrost distribution, Ice veins, Frozen rocks, Russia

50-6358

Thickness and structural characteristics of the cryolithozone in northwest Siberia according to borehole geophysical data. [Moshchnost' i osobennosti stroeniia kriolitozony severa Zapadnoĭ Sibiri po dannym skvazhinoĭ geofiziki]

Agalakov, S.E., Materialy Pervoĭ konferentsii geokriologov Rossii, 3-5 iiunia 1996 g., MGU im. M.V. Lomonosova, Kniga 1 (Proceedings of the First Conference of Russian Geocryologists, June 3-5, 1996, Moscow State University, Volume 1), Moscow, MGU geologicheskiĭ fakul'tet, kafedra geokriologii, 1996, p.65-73, In Russian. 4 refs.

Geocryology, Permafrost thickness, Permafrost structure, Permafrost distribution, Geophysical surveys, Boreholes, Temperature measurement, Russia—Siberia, Russia—Yamal Peninsula

50-6359

Cryolithozone of Western Siberia (thermal condition, database and mapping). [Kriolitozona Zapadnoĭ Sibiri (teplovoe sostoianie, baza dannykh i kartirovanie)]

An, V.V., Deviatkin, V.N., Skorbilin, N.A., Materialy Pervoĭ konferentsii geokriologov Rossii, 3-5 iiunia 1996 g., MGU im. M.V. Lomonosova, Kniga 1 (Proceedings of the First Conference of Russian Geocryologists, June 3-5, 1996, Moscow State University, Volume 1), Moscow, MGU geologicheskiĭ fakul'tet, kafedra geokriologii, 1996, p.74-79, In Russian. 11 refs.

Geocryology, Thermal regime, Permafrost thermal properties, Mapping, Data processing, Computer programs, Computer applications, Russia—Siberia

50-6360

Distribution characteristics of taliks beneath lakes in the Bovanenko region. [Osobennosti rasprostraneniia podozernykh talikov na territorii Bovanenkovskogo mestorozhdeniia]

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Geocryology, Taliks beneath lakes, Landscape types, Lakes, Terraces, Permafrost thermal properties, Thermokarst lakes, Russia—Yamal Peninsula

50-6361

Creation of a geocryology database for Yakutia. [Sozdanie geokriologicheskoĭ bazy dannykh IAkutii]

Balobaev, V.T., Alekseeva, O.I., Zhelezniak, M.N., Shats, M.M., Materialy Pervoĭ konferentsii geokriologov Rossii, 3-5 iiunia 1996 g., MGU im. M.V. Lomonosova, Kniga 1 (Proceedings of the First Conference of Russian Geocryologists, June 3-5, 1996, Moscow State University, Volume 1), Moscow, MGU geologicheskiĭ fakul'tet, kafedra geokriologii, 1996, p.93-100, In Russian. 3 refs.

Geocryology, Data processing, Computer applications, Russia—Yakutia

50-6362

Basic state of engineering geocryological zoning. [Osnovnye polozheniia inzhenerno-geokriologicheskogo raĭonirovaniia]

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Geocryology, Engineering geology, Mapping, Russia

50-6363

Subaqueous cryological survey and mapping of the oceanic cryolithozone. [Subakval'naia kriologicheskaia s"emka i kartografirovanie okeanicheskoĭ kriolitozony]

Zhigarev, L.A., Materialy Pervoĭ konferentsii geokriologov Rossii, 3-5 iiunia 1996 g., MGU im. M.V. Lomonosova, Kniga 1 (Proceedings of the First Conference of Russian Geocryologists, June 3-5, 1996, Moscow State University, Volume 1), Moscow, MGU geologicheskiĭ fakul'tet, kafedra geokriologii, 1996, p.104-113, In Russian. 5 refs.

Geocryology, Marine geology, Mapping, Subsea permafrost, Russia

50-6364

Geocryological characteristics of the intermontane troughs in the Altay Mountains. [Geokriologicheskie osobennosti mezhgornykh vpadin Gornogo Altaia]

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Geocryology, Subpermafrost ground water, Suprapermafrost ground water, Ground water, Artesian water, Water reserves, Russia—Altay Mountains

50-6365

Method of preparing a geocryological foundation for hydrogeological mapping. [O metodike sostavleniia geokriologicheskoĭ osnovy pri gidrogeologicheskom kartografirovanii]

Lomovtseva, N.S., Materialy Pervoĭ konferentsii geokriologov Rossii, 3-5 iiunia 1996 g., MGU im. M.V. Lomonosova, Kniga 1 (Proceedings of the First Conference of Russian Geocryologists, June 3-5, 1996, Moscow State University, Volume 1), Moscow, MGU geologicheskiĭ fakul'tet, kafedra geokriologii, 1996, p.118-124, In Russian. 3 refs.

Geocryology, Mapping, Hydrogeology, Frozen rock strength, Permafrost depth, Subpermafrost ground water, Russia—Yakutia

50-6366

Regional geocryology (current status, trends and prospects for development). [Regional'naia geokriologiia (sovremennoe sostoianie, napravleniia i perspektivy razvitiia)]

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Geocryology, Research projects, Mapping, Russia

50-6367

Formation of the water level regime of subpermafrost ground water in a coal seam in Bukhta Ugol'naya (Chukotka). [Formirovanie urovennogo rezhima podmerzlotnykh vod kamennougol'nogo mestorozhdeniia Bukhty Ugol'noĭ (Chukotka)]

Ruzanov, V.T., Oleĭnik, V.A., Materialy Pervoĭ konferentsii geokriologov Rossii, 3-5 iiunia 1996 g., MGU im. M.V. Lomonosova, Kniga 1 (Proceedings of the First Conference of Russian Geocryologists, June 3-5, 1996, Moscow State University, Volume 1), Moscow, MGU geologicheskiĭ fakul'tet, kafedra geokriologii, 1996, p.130-138, In Russian. 4 refs.

Geocryology, Subpermafrost ground water, Water balance, Water level, Hydrogeology, Coal, Russia—Bukhta Ugol'naya, Russia—Chukotskiy Peninsula

50-6368

Characteristics of the seasonal freezing of rocks in the Tien Shan. [Osobennosti sezonnogo promerzaniia porod v gorakh Tian'-Shania]

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Geocryology, Frozen rocks, Seasonal freeze thaw, Snow cover effect, Slope orientation, Frost penetration, Vegetation factors, Soil composition, Analysis (mathematics), Russia—Tien Shan

50-6369

Mapping the territory of the Bovanenko gas condensate field according to the distribution of cryopegs (Yamal Peninsula). [Kartirovanie territorii Bovanenkovskogo GKM po usloviiam rasprostraneniia kriopegov (poluostrov IAmal)]

Streletskaia, I.D., Ivanova, N.V., Rivkin, F.M., Materialy Pervoĭ konferentsii geokriologov Rossii, 3-5 iiunia 1996 g., MGU im. M.V. Lomonosova, Kniga 1 (Proceedings of the First Conference of Russian Geocryologists, June 3-5, 1996, Moscow State University, Volume 1), Moscow, MGU geologicheskiĭ fakul'tet, kafedra geokriologii, 1996, p.149-153, In Russian.

Geocryology, Brines, Unfrozen water content, Mapping, Ice lenses, Russia—Yamal Peninsula

50-6370

Probability model for the structure of frozen strata in Central and Eastern Siberia. [Veroiatnostnaia model' stroeniia merzlykh tolshch Sredneĭ i Vostochnoĭ Sibiri]

IAkupov, V.S., Kalinin, V.M., Akhmetshin, A.A., Danilov, V.S., Materialy Pervoĭ konferentsii geokriologov Rossii, 3-5 iiunia 1996 g., MGU im. M.V. Lomonosova, Kniga 1 (Proceedings of the First Conference of Russian Geocryologists, June 3-5, 1996, Moscow State University, Volume 1), Moscow, MGU geologicheskiĭ fakul'tet, kafedra geokriologii, 1996, p.154-163, In Russian. 15 refs.

Geocryology, Mathematical models, Thaw depth, Cryogenic structures, Russia—Siberia

50-6371

Exploration for hydrocarbon deposits and engineering preparation of oil and gas provinces according to data on the structure of frozen strata. [Poiski zalezheĭ uglevodorodov i inzhenernaia podgotovka neftegazovykh provintsiĭ po dannym o stroenii merzlykh tolshch]

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Geocryology, Maps, Hydrocarbons, Natural gas, Crude oil, Cryogenic structures, Engineering geology, Frost penetration, Thaw depth, Seasonal freeze thaw, Subpermafrost ground water, Russia—Siberia

50-6372

Permafrost microbiology. [Mikrobiologiia vechnoĭ merzloty]

Gilichinskiĭ, D.A., Vorob'eva, E.A., Soina, V.S., Rivkina, E.M., Fedorov-Davydov, D.G., Materialy Pervoĭ konferentsii geokriologov Rossii, 3-5 iiunia 1996 g., MGU im. M.V. Lomonosova, Kniga 1 (Proceedings of the First Conference of Russian Geocryologists, June 3-5, 1996, Moscow State University, Volume 1), Moscow, MGU geologicheskiĭ fakul'tet, kafedra geokriologii, 1996, p.174-185, In Russian.

Geocryology, Cryobiology, Microbiology, Permafrost physics, Tundra, Russia

50-6373

Alluvial-proluvial model of the formation of perennially frozen strata in fluvial plains of the cryolithozone. [Alliuvial'no-proliuvial'naia model' formirovaniia mnogoletnemerzlykh tolshch na fliuvial'nykh ravninakh kriolitozony]

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Geocryology, Permafrost origin, Alluvium, Sediments, Plains, Russia

50-6374

Arctic Ocean—a special natural cryogenic system. [Arkticheskiĭ okean—osobaia kriogennaia prirodnaia sistema]

Danilov, I.D., Materialy Pervoĭ konferentsii geokriologov Rossii, 3-5 iiunia 1996 g., MGU im. M.V. Lomonosova, Kniga 1 (Proceedings of the First Conference of Russian Geocryologists, June 3-5, 1996, Moscow State University, Volume 1), Moscow, MGU geologicheskiĭ fakul'tet, kafedra geokriologii, 1996, p.193-203, In Russian. 20 refs.

Sea ice, Permafrost origin, Oceanography, Heat flux, Heat transfer, Air ice water interaction, Water temperature, Sea water, Geocryology, Marine geology, Arctic Ocean

50-6375

New data on Quaternary geology and the cryogenic structure of frozen strata on Taymyr (Lake Labaz region). [Novye dannye o chetvertichnoĭ geologii i kriogennom stroenii merzlykh tolshch Taĭmyra (raĭon oz. Labaz)]

Dereviagin, A.IU., Zigert, K., Troshin, E.V., Shilova, G.N., Materialy Pervoĭ konferentsii geokriologov Rossii, 3-5 iiunia 1996 g., MGU im. M.V. Lomonosova, Kniga 1 (Proceedings of the First Conference of Russian Geocryologists, June 3-5, 1996, Moscow State University, Volume 1), Moscow, MGU geologicheskiĭ fakul'tet, kafedra geokriologii, 1996, p.204-212, In Russian. 8 refs.

Geocryology, Quaternary deposits, Paleoclimatology, Lake ice, Ice cover thickness, Climatic factors, Permafrost origin, Russia—Labaz, Lake, Russia—Taymyr Peninsula

50-6376

State and salinity of soils in the littoral sections of the Kara Sea. [Sostoianie i zasolennost' gruntov pribrezhnykh uchastkov Karskogo moria]

Dubikov, G.I., Ivanova, N.V., Materialy Pervoĭ konferentsii geokriologov Rossii, 3-5 iiunia 1996 g., MGU im. M.V. Lomonosova, Kniga 1 (Proceedings of the First Conference of Russian Geocryologists, June 3-5, 1996, Moscow State University, Volume 1), Moscow, MGU geologicheskiĭ fakul'tet, kafedra geokriologii, 1996, p.213-222, In Russian. 4 refs.

Geocryology, Saline soils, Frozen ground, Frozen ground temperature, Brines, Terraces, Russia—Kara Sea

50-6377

Paleographic conditions for the formation of the ice content in homogeneous age varved clays in key cross sections from the northern Enisey River area. [Paleograficheskie usloviia formirovaniia l'distosti odnovozrastnykh lentochnykh glin opornykh razrezov Eniseĭskogo Severa]

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Geocryology, Pleistocene, Paleoclimatology, Clays, Isotope analysis, Oxygen isotopes, Cryogenic structures, Ice formation, Ground ice, Russia—Yenisey River

50-6378

Cryogenic structure of surface deposits in Central Yakutia. [Kriogennoe stroenie pokrovnykh otlozheniĭ Tsentral'noĭ IAkutii]

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Geocryology, Cryogenic structures, Ice veins, Frozen rocks, Sands, Loams, Alluvium, Rivers, Russia—Yakutia, Russia—Vilyuy River

50-6379

Cryolithological structure of Quaternary deposits on Wrangel Island. [Kriolitologicheskoe stroenie chetvertichnykh otlozheniĭ ostrova Vrangelia]

Kotov, A.N., Lozhkin, A.V., Anderson, P.M., Materialy Pervoĭ konferentsii geokriologov Rossii, 3-5 iiunia 1996 g., MGU im. M.V. Lomonosova, Kniga 1 (Proceedings of the First Conference of Russian Geocryologists, June 3-5, 1996, Moscow State University, Volume 1), Moscow, MGU geologicheskiĭ fakul'tet, kafedra geokriologii, 1996, p.238-242, In Russian. 6 refs.

Geocryology, Lithology, Quaternary deposits, Cryogenic structures, Paleoclimatology, Ice veins, Lacustrine deposits, Sediments, Sands, Russia—Wrangel Island

50-6380

Ice complex and greenhouse gases. [Ledovyĭ kompleks i parnikovye gazy]

Kunitskiĭ, V.V., Materialy Pervoĭ konferentsii geokriologov Rossii, 3-5 iiunia 1996 g., MGU im. M.V. Lomonosova, Kniga 1 (Proceedings of the First Conference of Russian Geocryologists, June 3-5, 1996, Moscow State University, Volume 1), Moscow, MGU geologicheskiĭ fakul'tet, kafedra geokriologii, 1996, p.243-252, In Russian. 9 refs.

Geocryology, Greenhouse effect, Carbon dioxide, Ice veins, Ice wedges, Frozen rocks, Ice composition, Ice melting, Russia—Yakutia

50-6381

Geochemical fields in the cryolithozone. [Geokhimicheskie polia v kriolitozone]

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Geocryology, Geochemistry, Permafrost physics, Russia

50-6382

Composition and origin of water-soluble salts in blanket fluvial deposits in Central Yakutia. [Sostav i genezis vodnorastvorimykh soleĭ v pokrovnykh fliuvial'nykh otlozheniiakh Tsentral'noĭ IAkutii]

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Geocryology, Alluvium, Rivers, Precipitation (meteorology), Rain, Atmospheric composition, Snowfall, Snow composition, Ions, Surface waters, Water chemistry, Salinity, Saline soils, Suprapermafrost ground water, Permafrost, Russia—Yakutia

50-6383

Methane in frozen rocks and some aspects of forecasting its emission (Bovanenko gas condensate field, Yamal Penisula). [Metan v merzlykh porodakh i nekotorye aspekty prognoza ego emissii (Bovanenkovskoe GKM, p-ov IAmal)]

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Geocryology, Frozen rocks, Rock properties, Natural gas, Forecasting, Russia—Yamal Peninsula

50-6384

Syngenetic layered ground ice in littoral marine deposits in Baydaratskaya Bay. [Singeneticheskie plastovye l'dy v pribrezhno-morskikh otlozheniiakh Baĭdaratskoĭ guby]

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Geocryology, Marine deposits, Paleoclimatology, Frozen rocks, Ground ice, Active layer, Russia—Baydaratskaya Bay

50-6385

Tritium analysis of ground ice: results and prospects. [Tritievyĭ analiz podzemnykh l'dov: rezul'taty i perspektivy]

Chizhov, A.B., Dereviagin, A.IU., Vlasova, L.S., Simonov, E.F., Materialy Pervoĭ konferentsii geokriologov Rossii, 3-5 iiunia 1996 g., MGU im. M.V. Lomonosova, Kniga 1 (Proceedings of the First Conference of Russian Geocryologists, June 3-5, 1996, Moscow State University, Volume 1), Moscow, MGU geologicheskiĭ fakul'tet, kafedra geokriologii, 1996, p.283-290, In Russian. 9 refs.

Geocryology, Ground ice, Frozen rocks, Isotope analysis, Radioactive isotopes, Ice composition, Active layer, Ice veins, Permafrost, Tritium, Russia—Siberia, Russia—Yakutia, Russia—Amur River, Russia—Taymyr Peninsula

50-6386

Characteristics of the gas content of permafrost strata within the boundaries of the Bovanenko gas condensate field. [Osobennosti gazosoderzhaniia tolshch merzlykh porod v predelakh Bovanenkovskogo gazokondensatnogo mestorozhdeniia]

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Geocryology, Hydrates, Permafrost physics, Natural gas, Russia—Yamal Peninsula

50-6387

Estimating changes in the temperature regime and condition of rocks based on the analysis of climatic data. [Otsenka izmenchivosti temperaturnogo rezhima i sostoianiia porod na osnove analiza klimaticheskikh dannykh]

Ershov, E.D., Parmuzin, S.IU., Shatalova, T.IU., Zhirnova, E.V., Sazonova, T.S., Materialy Pervoĭ konferentsii geokriologov Rossii, 3-5 iiunia 1996 g., MGU im. M.V. Lomonosova, Kniga 1 (Proceedings of the First Conference of Russian Geocryologists, June 3-5, 1996, Moscow State University, Volume 1), Moscow, MGU geologicheskiĭ fakul'tet, kafedra geokriologii, 1996, p.300-309, In Russian. 7 refs.

Geocryology, Thermal regime, Frozen rocks, Frozen rock temperature, Climatic factors, Russia—Siberia

50-6388

Experimental study of the thermal regime of soils in the arctic regions of Western Siberia. [Eksperimental'noe izuchenie termicheskogo rezhima gruntov v arkticheskikh raĭonakh Zapadnoĭ Sibiri]

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Geocryology, Thermal regime, Frozen ground temperature, Frozen ground thermodynamics, Soil temperature, Surface temperature, Seasonal freeze thaw, Thaw depth, Seasonal variations, Russia—Siberia

50-6389

Characteristics of the geocryological conditions in shallow water areas in the cryolithozone. [Osobennosti geokriologicheskikh usloviĭ na melkovodnykh uchastkakh akvatoriĭ kriolitozony]

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Geocryology, Snow ice, Snow ice interface, Snow cover, Snow depth, Ice cover, Analysis (mathematics), Ice formation, Bottom sediment, Taliks, Russia

50-6390

Effect of cryopegs on the temperature and salinity of surrounding permafrost. [Vliianie tekhnogennykh kriopegov na temperaturu i zasolennost' vmeshchaiushchikh mnogoletnemerzlykh porod]

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Geocryology, Permafrost thermal properties, Salinity, Brines, Unfrozen water content, Frozen rock temperature, Russia—Yakutia

50-6391

Regularities in the interaction of frozen strata with gas or gas hydrate beds. [Zakonomernosti vzaimodeĭstviia merzlykh tolshch i gazovykh (gazogidratnykh) zalezheĭ]

Romanovskiĭ, N.N., Tipenko, G.S., Materialy Pervoĭ konferentsii geokriologov Rossii, 3-5 iiunia 1996 g., MGU im. M.V. Lomonosova, Kniga 1 (Proceedings of the First Conference of Russian Geocryologists, June 3-5, 1996, Moscow State University, Volume 1), Moscow, MGU geologicheskiĭ fakul'tet, kafedra geokriologii, 1996, p.338-347, In Russian. 13 refs.

Geocryology, Hydrates, Permafrost thermal properties, Mathematical models, Geothermal prospecting, Russia

50-6392

Heat flow in the lithosphere in the western Siberian platform. [Teplovoĭ potok litosfery zapadnoĭ chasti Sibirskoĭ platformy]

Deviatkin, V.N., An, V.V., Duchkov, A.D., Materialy Pervoĭ konferentsii geokriologov Rossii, 3-5 iiunia 1996 g., MGU im. M.V. Lomonosova, Kniga 1 (Proceedings of the First Conference of Russian Geocryologists, June 3-5, 1996, Moscow State University, Volume 1), Moscow, MGU geologicheskiĭ fakul'tet, kafedra geokriologii, 1996, p.348-354, In Russian. 13 refs.

Geocryology, Heat transfer, Frozen rock temperature, Air temperature, Geothermometry, Russia—Siberia

50-6393

Effect of soil-ground and surface conditions on the insulating properties of snow cover. [O vliianii pochvenno-gruntovykh i poverkhnostnykh usloviĭ na teploizoliatsionnye svoĭstva snezhnogo pokrova]

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Geocryology, Snow cover effect, Thermal insulation, Heat transfer, Snow depth, Soil temperature, Frozen ground temperature, Air temperature, Russia

50-6394

Effect of technogenic disturbances on the thermal regime of soils in Central Yakutia. [Vliianie tekhnogenikh narusheniĭ na temperaturnyĭ rezhim gruntov v Tsentral'noĭ IAkutii]

Skriabin, P.N., Varlamov, S.P., Skachkov, IU.B., Shender, N.I., Tetel'baum, A.S., Murzin, IU.A., Materialy Pervoĭ konferentsii geokriologov Rossii, 3-5 iiunia 1996 g., MGU im. M.V. Lomonosova, Kniga 1 (Proceedings of the First Conference of Russian Geocryologists, June 3-5, 1996, Moscow State University, Volume 1), Moscow, MGU geologicheskiĭ fakul'tet, kafedra geokriologii, 1996, p.362-371, In Russian. 8 refs.

Geocryology, Environmental impact, Environmental protection, Thermal regime, Frozen ground temperature, Frozen ground thermodynamics, Peat, Loams, Sands, Railroads, Russia—Yakutia

50-6395

Active layer of perennially frozen ground as a natural self-regulating system. [Deiatel'nyĭ sloĭ mnogoletnemerzlykh gruntov kak prirodnaia samoreguliruiushchaia sistema]

Krivoshchekov, V.S., Materialy Pervoĭ konferentsii geokriologov Rossii, 3-5 iiunia 1996 g., MGU im. M.V. Lomonosova, Kniga 1 (Proceedings of the First Conference of Russian Geocryologists, June 3-5, 1996, Moscow State University, Volume 1), Moscow, MGU geologicheskiĭ fakul'tet, kafedra geokriologii, 1996, p.372-380, In Russian. 14 refs.

Geocryology, Active layer, Permafrost, Permafrost structure, Thaw depth, Seasonal freeze thaw, Analysis (mathematics), Russia

50-6396

Regionalization of territories according to degree of risk to cryogenic processes in the placement of engineering structures (in the example of the Bovanenko field on the Yamal Peninsula). [Raĭonirovanie territorii po stepeni riska razvitiia kriogennykh protsessov pri razmeshchenii inzhenernykh sooruzheniĭ (na primere Bovanenskogo mestorozhdeniia p-va IAmal)]

Kuznetsova, I.L., Cherniad'ev, V.P., Materialy Pervoĭ konferentsii geokriologov Rossii, 3-5 iiunia 1996 g., MGU im. M.V. Lomonosova, Kniga 1 (Proceedings of the First Conference of Russian Geocryologists, June 3-5, 1996, Moscow State University, Volume 1), Moscow, MGU geologicheskiĭ fakul'tet, kafedra geokriologii, 1996, p.381-388, In Russian.

Geocryology, Environmental impact, Environmental protection, Engineering geology, Snow depth, Thaw depth, Precipitation (meteorology), Thermokarst, Soil erosion, Economic analysis, Russia—Yamal Peninsula

50-6397

Characteristics of the development of cryogenic processes in natural-technogenic systems in the Baykal region. [Osobennosti razvitiia kriogennykh protsessov v prirodno-tekhnogennykh sistemakh Pribaĭkal'ia]

Leshchikov, F.N., Materialy Pervoĭ konferentsii geokriologov Rossii, 3-5 iiunia 1996 g., MGU im. M.V. Lomonosova, Kniga 1 (Proceedings of the First Conference of Russian Geocryologists, June 3-5, 1996, Moscow State University, Volume 1), Moscow, MGU geologicheskiĭ fakul'tet, kafedra geokriologii, 1996, p.389-398, In Russian.

Geocryology, Frost penetration, Permafrost origin, Thermokarst, Deformation, Slope processes, Solifluction, Shore erosion, Russia—Baykal, Lake

50-6398

New concept in studying and forecasting frost heave as applied to the problems of controlling natural-technical systems. [Novaia kontseptsiia izucheniia i prognoza kriogennogo pucheniia primenitel'no k zadacham upravleniia PTS]

Nevecheria, V.L., Materialy Pervoĭ konferentsii geokriologov Rossii, 3-5 iiunia 1996 g., MGU im. M.V. Lomonosova, Kniga 1 (Proceedings of the First Conference of Russian Geocryologists, June 3-5, 1996, Moscow State University, Volume 1), Moscow, MGU geologicheskiĭ fakul'tet, kafedra geokriologii, 1996, p.399-406, In Russian.

Geocryology, Frost heave, Forecasting, Frost penetration, Soil freezing, Soil water, Frozen ground temperature, Russia

50-6399

Variations in the frost heave intensity of frost-susceptible soils in natural conditions in southern Transbaikal. [Izmenchivost' puchinistosti morozoopasnykh gruntov v prirodnykh usloviakh IUzhnogo Zabaĭkal'ia]

Sal'nikov, P.I., Materialy Pervoĭ konferentsii geokriologov Rossii, 3-5 iiunia 1996 g., MGU im. M.V. Lomonosova, Kniga 1 (Proceedings of the First Conference of Russian Geocryologists, June 3-5, 1996, Moscow State University, Volume 1), Moscow, MGU geologicheskiĭ fakul'tet, kafedra geokriologii, 1996, p.407-416, In Russian. 6 refs.

Geocryology, Frost heave, Frost penetration, Soil freezing, Active layer, Slope orientation, Cryogenic soils, Soil temperature, Russia—Transbaikal

50-6400

Dynamics of thermokarst relief on the Yukechinsk polygon. [Dinamika termokarstovogo rel'efa na IUkechinskom poligone]

Bosikov, N.P., Materialy Pervoĭ konferentsii geokriologov Rossii, 3-5 iiunia 1996 g., MGU im. M.V. Lomonosova, Kniga 1 (Proceedings of the First Conference of Russian Geocryologists, June 3-5, 1996, Moscow State University, Volume 1), Moscow, MGU geologicheskiĭ fakul'tet, kafedra geokriologii, 1996, p.417-425, In Russian. 17 refs.

Geocryology, Thermokarst, Thermokarst lakes, Precipitation (meteorology), Alassy, Meltwater, Russia—Lena River, Russia—Amga River, Russia—Yakutia

50-6401

Regularities in the development of solifluction, associated with the strength and deformation of thawing ground. [Zakonomernosti razvitiia solifliuktsii, sviazannye s prochnost'iu i deformiruemost'iu ottaivaiushchego grunta]

Bondarenko, G.I., Materialy Pervoĭ konferentsii geokriologov Rossii, 3-5 iiunia 1996 g., MGU im. M.V. Lomonosova, Kniga 1 (Proceedings of the First Conference of Russian Geocryologists, June 3-5, 1996, Moscow State University, Volume 1), Moscow, MGU geologicheskiĭ fakul'tet, kafedra geokriologii, 1996, p.426-435, In Russian. 11 refs.

Geocryology, Solifluction, Ground thawing, Frozen ground strength, Frozen ground mechanics, Soil strength, Soil water, Thaw depth, Soil profiles, Russia

50-6402

Nature of the displacement of dispersed rocks on slopes. [Priroda smeshcheniia dispersnykh porod na sklonakh]

Petrov, V.S., Petrova, M.A., Manzyrev, D.V., Materialy Pervoĭ konferentsii geokriologov Rossii, 3-5 iiunia 1996 g., MGU im. M.V. Lomonosova, Kniga 1 (Proceedings of the First Conference of Russian Geocryologists, June 3-5, 1996, Moscow State University, Volume 1), Moscow, MGU geologicheskiĭ fakul'tet, kafedra geokriologii, 1996, p.436-445, In Russian. 7 refs.

Geocryology, Slope stability, Active layer, Seasonal freeze thaw, Rock mechanics, Frozen ground thermodynamics, Solifluction, Deformation, Russia

50-6403

Observations of the mobility of rock streams in the Udokan Range (Northern Transbaikal). [Nabliudeniia za podvizhnost'iu kurumov v predelakh khrebta Udokan (Severnoe Zabaĭkal'e)]

Romanovskiĭ, N.N., Sergeev, D.O., Zagriazkin, D.D., Tumskoĭ, V.E., Materialy Pervoĭ konferentsii geokriologov Rossii, 3-5 iiunia 1996 g., MGU im. M.V. Lomonosova, Kniga 1 (Proceedings of the First Conference of Russian Geocryologists, June 3-5, 1996, Moscow State University, Volume 1), Moscow, MGU geologicheskiĭ fakul'tet, kafedra geokriologii, 1996, p.446-455, In Russian. 5 refs.

Geocryology, Rock streams, Active layer, Seasonal freeze thaw, Slope orientation, Slope processes, Rock mechanics, Russia—Transbaikal, Russia—Udokan Range

50-6404

Effect of introduced disturbances on the development of thermo-erosional processes. [Vliianie tekhnogennykh narushenii na razvitie termoerozionnykh protsessov]

Glavatskikh, V.V., Chistotinov, L.V., Materialy Pervoĭ konferentsii geokriologov Rossii, 3-5 iiunia 1996 g., MGU im. M.V. Lomonosova, Kniga 1 (Proceedings of the First Conference of Russian Geocryologists, June 3-5, 1996, Moscow State University, Volume 1), Moscow, MGU geologicheskiĭ fakul'tet, kafedra geokriologii, 1996, p.456-465, In Russian. 5 refs.

Geocryology, Erosion, Ice veins, Frozen ground mechanics, Snow cover effect, Thaw depth, Shore erosion, Slopes, Roadbeds, Environmental impact, Russia

50-6405
Characteristics of the development of thermo-erosional gullies on mid-alassy slopes during the disturbance of surface conditions. [Osobennosti razvitiia termoeroizonnykh ovragov na sklonakh mezhalasiĭ pri narushenii poverkhnostnykh uslovii]
Varlamov, S.P., Materialy Pervoĭ konferentsii geokriologov Rossii, 3-5 iiunia 1996 g., MGU im. M.V. Lomonosova, Kniga 1 (Proceedings of the First Conference of Russian Geocryologists, June 3-5, 1996, Moscow State University, Volume 1), Moscow, MGU geologicheskiĭ fakul'tet, kafedra geokriologii, 1996, p.466-474, In Russian. 17 refs.
Geocryology, Gullies, Alassy, Soil erosion, Slope processes, Surface properties, Precipitation (meteorology), Soil water, Loams, Frozen ground temperature, Russia

50-6406
Forecasting the development of gully erosion allowing for frozen ground conditions in the Yamburg field. [Prognoz razvitiia ovrazhnoĭ erozii s uchetom merzlotno-gruntovykh usloviĭ IAmburgskogo mestorozhdeniia]
Skubitskaia, M.G., Materialy Pervoĭ konferentsii geokriologov Rossii, 3-5 iiunia 1996 g., MGU im. M.V. Lomonosova, Kniga 1 (Proceedings of the First Conference of Russian Geocryologists, June 3-5, 1996, Moscow State University, Volume 1), Moscow, MGU geologicheskiĭ fakul'tet, kafedra geokriologii, 1996, p.475-483, In Russian. 2 refs.
Geocryology, Forecasting, Soil erosion, Gullies, Frozen ground thermodynamics, Soil water, Thermal conductivity, Ground thawing, Floods, Solifluction, Russia—Yamburg

50-6407
Experimental studies on the resistance of frozen ground to maximum thermo-erosion washout. [Eksperimental'nye issledovaniia soprotivleniia merzlykh gruntov predel'no-termoerozionnomu razmyvu]
Pendin, V.V., Ganova, S.D., Materialy Pervoĭ konferentsii geokriologov Rossii, 3-5 iiunia 1996 g., MGU im. M.V. Lomonosova, Kniga 1 (Proceedings of the First Conference of Russian Geocryologists, June 3-5, 1996, Moscow State University, Volume 1), Moscow, MGU geologicheskiĭ fakul'tet, kafedra geokriologii, 1996, p.484-493, In Russian. 7 refs.
Geocryology, Water erosion, Nomographs, Loams, Frozen ground compression, Soil compaction, Russia—Yamal Peninsula

50-6408
Goals in studying marine shores in the cryolithozone for the purpose of rational economic development. [Zadachi izucheniia morskikh poberezhiĭ v kriolitozone v tseliakh ratsional'nogo khoziaĭstvennogo osvoeniia]
Sovershaev, V.A., Materialy Pervoĭ konferentsii geokriologov Rossii, 3-5 iiunia 1996 g., MGU im. M.V. Lomonosova, Kniga 1 (Proceedings of the First Conference of Russian Geocryologists, June 3-5, 1996, Moscow State University, Volume 1), Moscow, MGU geologicheskiĭ fakul'tet, kafedra geokriologii, 1996, p.494-503, In Russian. 3 refs.
Geocryology, Shores, Economic development, Terraces, Active layer, Russia—Baydaratskaya Bay, Russia—Siberia, Russia—Yamal Peninsula

50-6409
Regularities in the processes of thermo-abrasion and thermo-denudation of the shores of arctic seas (in the example of key sections of the coastal areas of the Laptev Sea). [Zakonomernosti protsessov termoabrazii i termodenudatsii beregov arkticheskikh moreĭ (na primere kliuchevykh uchastkov poberezh'ia moria Laptevykh)]
Grigor'ev, M.N., Materialy Pervoĭ konferentsii geokriologov Rossii, 3-5 iiunia 1996 g., MGU im. M.V. Lomonosova, Kniga 1 (Proceedings of the First Conference of Russian Geocryologists, June 3-5, 1996, Moscow State University, Volume 1), Moscow, MGU geologicheskiĭ fakul'tet, kafedra geokriologii, 1996, p.504-511, In Russian. 6 refs.
Geocryology, Abrasion, Shore erosion, Russia—Laptev Sea

50-6410
Stationary study of the dynamics of shoreline slopes in the Bol'shezemel'skaya tundra. [Statsionarnoe izuchenie dinamiki beregovykh sklonov v Bol'shezemel'skoĭ tundre]
Glavatskikh, V.V., Chistotinov, L.V., Materialy Pervoĭ konferentsii geokriologov Rossii, 3-5 iiunia 1996 g., MGU im. M.V. Lomonosova, Kniga 1 (Proceedings of the First Conference of Russian Geocryologists, June 3-5, 1996, Moscow State University, Volume 1), Moscow, MGU geologicheskiĭ fakul'tet, kafedra geokriologii, 1996, p.512-521, In Russian.
Geocryology, Shores, Slope processes, Tundra terrain, Gullies, Freeze thaw cycles, Russia—Bol'shezemel'skaya Tundra

50-6411
Conditions for the formation of taliks in mountain regions and foothills (in the example of the western Aldan antecline). [Usloviia formirovaniia talikov v gornykh oblastiakh i predgor'iakh (na primere zapadnoĭ chasti Aldanskoĭ anteklizy)]
Zheleznìak, M.N., Popov, V.F., Nim, IU.A., Materialy Pervoĭ konferentsii geokriologov Rossii, 3-5 iiunia 1996 g., MGU im. M.V. Lomonosova, Kniga 1 (Proceedings of the First Conference of Russian Geocryologists, June 3-5, 1996, Moscow State University, Volume 1), Moscow, MGU geologicheskiĭ fakul'tet, kafedra geokriologii, 1996, p.522-528, In Russian. 5 refs.
Geocryology, Taliks, Geothermometry, Permafrost distribution, Permafrost depth, Frozen rock temperature, Russia—Aldanskoye Nagor'ye

50-6412
Formation of taliks and high temperature frozen rocks under conditions of Central Yakutia. [Formirovanie talikov i vysokotemperaturnykh merzlykh porod v usloviiakh Tsentral'noĭ IAkutii]
Shender, N.I., Boĭtsov, A.V., Tetel'baum, A.S., Materialy Pervoĭ konferentsii geokriologov Rossii, 3-5 iiunia 1996 g., MGU im. M.V. Lomonosova, Kniga 1 (Proceedings of the First Conference of Russian Geocryologists, June 3-5, 1996, Moscow State University, Volume 1), Moscow, MGU geologicheskiĭ fakul'tet, kafedra geokriologii, 1996, p.529-537, In Russian. 10 refs.
Geocryology, Taliks, Frozen rocks, Frozen rock temperature, Phase transformations, Soil water, Active layer, Seasonal freeze thaw, Analysis (mathematics), Russia—Yakutia

50-6413
Lichenometric indications of the intensity of some exogenic processes. [Likhenometricheskaia indikatsiia intensivnosti nekotorykh ekzogennykh protsessov]
Galanin, A.A., Materialy Pervoĭ konferentsii geokriologov Rossii, 3-5 iiunia 1996 g., MGU im. M.V. Lomonosova, Kniga 1 (Proceedings of the First Conference of Russian Geocryologists, June 3-5, 1996, Moscow State University, Volume 1), Moscow, MGU geologicheskiĭ fakul'tet, kafedra geokriologii, 1996, p.538-545, In Russian. 5 refs.
Geocryology, Lichens, Slopes, Statistical analysis, Russia

50-6414
Life cycle strategy of the ice-associated copepod, *Paralabidocera antarctica* (Calanoida, Copepoda), at Syowa Station, Antarctica.
Tanimura, A., Hoshiai, T., Fukuchi, M., *Antarctic science*, Sep. 1996, 8(3), p.257-266, Refs. p.265-266.
Marine biology, Biomass, Ice cover effect, Sea ice, Ice water interface, Antarctica—Showa Station
The vertical distribution, abundance, population structure and life cycle of the ice-associated copepod *Paralabidocera antarctica* was studied in the fast ice near Showa Station in 1970, 1975 and 1982. The results indicated that *P. antarctica* inhabited the ice-seawater interface throughout the year with a one year life cycle and was actually present in the sea ice for most of the year except the summer. *P. antarctica* overwintered as naupliar stages (NIV-NV) with slow development in sea ice during winter. *P. antarctica* population then developed rapidly and attained adulthood in the water just beneath the sea ice during spring-summer. *P. antarctica* depended entirely on ice algae for food throughout its whole life-span, suggesting that the ice-seawater interface provides favorable food conditions for *P. antarctica*. The slow development in naupliar stages in sea ice and short copepodite life span in the water suggest that *P. antarctica* may adapt its growth strategy to suit the varying fast ice/water interface environment. (Auth.)

50-6415
Inventory of Antarctic sub-glacial lakes.
Siegert, M.J., Dowdeswell, J.A., Gorman, M.R., McIntyre, N.F., *Antarctic science*, Sep. 1996, 8(3), p.281-286, 12 refs.
Lakes, Ice sheets, Radio echo soundings, Subglacial drainage, Subglacial observations
An extensive analog database of 60 MHz radio-echo sounding records of Antarctica (covering 50% of the ice sheet) is held at the Scott Polar Research Institute, University of Cambridge. This database was analyzed in order to determine the presence and location of antarctic sub-glacial lakes. In total, 77 sub-glacial lake-type records were identified, 13 more than detected in previous studies. An inventory of these sub-glacial lakes includes geographical coordinates, minimum length and overlying ice thickness for each lake. Information concerning the location of the lakes indicates that the majority (ca. 70%) are found in the proximity of ice divides at Dome Charlie and Ridge B within East Antarctica. (Auth.)

50-6416
Climatology and implications for perennial lake ice occurrence at Bunger Hills Oasis, East Antarctica.
Doran, P.T., McKay, C.P., Meyer, M.A., Andersen, D.T., Wharton, R.A., Jr., Hastings, J.T., *Antarctic science*, Sep. 1996, 8(3), p.289-296, 13 refs.
Climatic factors, Weather stations, Weather observations, Lake ice, Frozen lakes, Glacier ice, Antarctica—Bunger Hills
The Bunger Hills contain many lakes, only a few of which maintain an ice cover all year. To understand the environmental conditions that allow for persistent ice cover, the authors established an automatic meteorological station on White Smoke Lake, a perennially ice-covered lake in contact with the Apfel Glacier. The data were collected from Jan. 1992-July 1993. The mean annual solar flux during this period was 115 W/m^2, the mean wind speed 4.6 m/s, and the mean air temperature -11.2°C. Summer degree-days above freezing are similar to regions of the Antarctic (the McMurdo Dry Valleys) with thick perennial lake ice but the winter freezing degree days are much smaller and are closer to regions with seasonal ice covers. The Bunger Hills seem to be in a marginal climatic region for the persistence of thick lake ice. Therefore, the extent of glacier ice contact becomes the controlling factor in maintaining an ice cover all year. It is proposed that this is either through the heat sink the glacier offers, and/or the positive feedback for ice growth provided by the high albedo of the adjacent glacier. (Auth.)

50-6417
Air Transport Options Workshop, to be held at the Antarctic Division, Hobart, Wednesday, 1 March 1995.
Australia. Antarctic Science Advisory Committee, Hobart, [1995], var. p.
International cooperation, Transportation, Aircraft, Aircraft landing areas, Logistics, Cargo
The Air Transport Options Workshop's scheduled agenda covers the following 6 areas to be considered: purpose and structure of the meeting, scientific benefits of an intercontinental system, basic operation of an intercontinental system, possibilities for an intercontinental system, working group sessions, and reports and conclusion of the meeting. Material relevant to the discussions is included.

50-6418
Snow studies at Maudheim.
Schytt, V., Norwegian-British-Swedish Antarctic Expedition, 1949-1952, Scientific results, Vol.IV A, Oslo, Norsk Polarinstitutt, 1958, p.5-63 + Plates IV A, 1-3, Refs. p.111-112.
Snow density, Snow morphology, Snow stratigraphy, Firn stratification, Expeditions, Antarctica—Maudheim Station, Antarctica—Queen Maud Land
The paper opens with brief reviews of the early snow studies (Expeditions) made during the period 1888-1913 in Greenland and from 1897 through 1941 in Antarctica. In the first glaciological pit examined at Maudheim on Sep. 30, 1950, thin layers of depth hoar or exceptionally coarse-grained firn were found to separate the fine-grained snow or firn on top of them from the ice-rich, once water-soaked firn below. Each very coarse stratum was interpreted as having been exposed to the warmth of an antarctic summer and further pit observations (Nov. 30, 1951 and Jan. 10, 1952) compared with snow stake measurements proved this to be the case. During the winter of 1951 a "deep pit" (11.8 m) was dug at Maudheim. The following observations were made: annual stratification; density variation with depth; grain size variation with depth and settling of the firn. Details of these observations are presented and discussed. (Auth. mod.)

50-6419
Snow studies inland.
Schytt, V., Norwegian-British-Swedish Antarctic Expedition, 1949-1952, Scientific results, Vol.IV B, Oslo, Norsk Polarinstitutt, 1958, p.65-112 + Plates IV B, 1-6, Refs. p.111-112.
Snow accumulation, Snow stratigraphy, Snow morphology, Expeditions, Antarctica—Queen Maud Land

The glaciological program of the N-B-S-A Expedition included a study of the regime of the inland ice sheet and of the ice shelves along the coast. Since no net ablation occurred except in a few very limited areas, the regime study was restricted to a study of accumulation. The snow stake measurements along the main route from Maudheim to the Advance Base are discussed in Vol. III E. In the present paper all results obtained from snow pits are described and discussed. Very good correlation was observed between stratigraphic details at Maudheim and in pits as far away as 200 km, but the greater the distance to the coast, the more difficult the interpretation of observed stratification. In certain areas the interpretation was made more difficult by the frequent formation of double summer surfaces. No significant general increase or decrease in accumulation with increasing distance from the coast could be observed within about 350 km of the coast. On the other hand, on the inland plateau the accumulation dropped about 50% according to the few observations available. The mean annual accumulation of the area between the coast and the inland plateau during 1949 and 1950 was 25 cm of water and most observations were within 5 cm of the mean value. (Auth. mod.)

50-6420

Inner structure of the ice shelf at Maudheim as shown by core drilling.

Schytt, V., Norwegian-British-Swedish Antarctic Expedition, 1949-1952, Scientific results, Vol.IV C, Oslo, Norsk Polarinstitutt, 1958, p.113-148 + summary, refs., and Plates IV C, 1-8, 36 refs.

Ice density, Ice cores, Variations, Ice crystal structure, Bubbles, Expeditions, Antarctica—Queen Maud Land, Antarctica—Maudheim Station

By means of a core drilling machine a hole was bored in Maudheim to a depth of 100 m below the ice shelf surface and cores were recovered for structural studies. From known facts about density distribution, height of the ice shelf above sea level, and density of the sea water, the thickness of the free-floating ice shelf has been calculated. The result is 190 m with an error probably not exceeding ±6 m. The crystal area was studied in thin sections and increased with depth. When plotted in a diagram the observations between 1 m and 70 m do not deviate much from a straight line; below 70 m the rate of crystal area increase becomes considerably greater. The frequency of large crystals (more than 8 mm^2 in area) also shows a sudden increase at 70 m depth. This discontinuity has been explained as showing the boundary between the accumulation deposited on the ice shelf and the ice supplied from the inland ice sheet. It has been concluded that no prominent, regular change in orientation pattern takes place down to 100 m depth in the ice shelf at Maudheim. (Auth. mod.)

50-6421

1989 ozone hole.

Nichol, S.E., Clarkson, T.S., *Weather and climate,* 1991, Vol.11, p.80-82, 5 refs.

Ozone, Antarctica—McMurdo Sound, Antarctica—Arrival Heights

The status of the ozone hole over Antarctica for 1989 is graph-plotted along with the measurements for 1987 and 1988. The three plots are discussed, compared and contrasted. It was thought that the ozone loss was on a two-year cycle and that 1989 would show a lesser loss but the plot was nearly identical to the one for 1987. These readings generally are seen to represent conditions in the McMurdo Sound area, with the readings being made by equipment at Arrival Heights.

50-6422

Contributions to the mass balance of the antarctic ice sheets. [Beiträge zum Massenhaushalt des antarktischen Inlandeises]

Loewe, F., *Petermanns Geographischen Mitteilungen,* [Oct.] 1961, No.4, p.269-274, In German with English and Russian summaries. 47 refs.

Ice accretion, Ablation, Ice shelves, Glacier ice, Sea level, Mass balance

According to recent observations the mean annual accumulation of the antarctic continent is equivalent to at least 10-12 cm of water. Rime, hoar-frost and evaporation are small items and balance approximately in the overall budget. Melting in the border regions and at the ice edge and calving remove only a small fraction of the accumulation. Removal of ice from the faster moving glaciers and ice shelves is of greater importance. The transport of drift snow might be important, but would be already included in the values of the net accumulation. Melting at the bottom of floating ice shelves might be substantial, but it would occur only in parts of the circumantarctic. Overall the present mass budget of the antarctic continent shows a gain in substance. The present rise in sea level might be caused by other reasons than a shrinking of the ice caps, such as by a slight warming of the oceans. (Auth.)

50-6423

Status report on the potential for the application of alternative energy systems at antarctic stations & outline strategy for improved energy sustainability. Version 1.2.

Guichard, A., Sandy Bay, Tasmania, Latitude Technologies, 1994, 24p. + appends., With French summary. Refs. passim.

Electric power, Wind power generation, Fuels, Heat sources, Stations, Cost analysis, Research projects

The exploratory stage of the French Australian project "Alternative Energy Systems for Antarctic Stations", which ends with the publication of this report, comprised a review of the energy production systems at antarctic stations with a view towards sustainability. This report summarizes the findings of the first year's exploratory work and outlines a new future for energy provision by proposing an outline strategy for an alternative energy system research and development project. The four following aspects are essential for overall success: the development of viable and cost effective systems at the antarctic stations; the provision of a broad outlook by linking to the project long term studies, notably renewable energy potential assessment and systems modelling; the guarantee of cohesiveness and practicality of the project to achieve results and the assurance of the applicability of the project's outcomes to other remote communities. Possible energy sources include wind, solar, natural gas and hydrogen. (Auth. mod.)

50-6424

Cold regions utilities monograph. Third edition.

Smith, D.W., ed, Low, N., ed, New York, American Society of Civil Engineers (ASCE), 1996, Var. p., Numerous refs. passim.

DLC TD168.C65 1996

Utilities, Sanitary engineering, Water supply, Water treatment, Waste disposal, Sewage disposal, Water pipelines, Frost protection, Health, Regional planning, Cold weather operation, Cost analysis

50-6425

Hindsight on river ice jam stability.

Beltaos, S., *Journal of cold regions engineering,* Sep. 1996, 10(3), p.122-133, 13 refs.

Ice jams, River ice, Stability, Stress concentration, Ice friction, Shear stress, Ice water interface, Ice cover thickness, Forecasting, Analysis (mathematics), Theories

50-6426

Aging and low-temperature cracking of asphalt concrete mixture.

Kliewer, J.E., Zeng, H.Y., Vinson, T.S., *Journal of cold regions engineering,* Sep. 1996, 10(3), p.134-148, 35 refs.

Bituminous concretes, Concrete strength, Concrete pavements, Concrete admixtures, Cracking (fracturing), Concrete hardening, Thermal stresses, Low temperature tests, Temperature effects

50-6427

Long-term pile load testing system performance in saline and ice-rich permafrost.

Biggar, K.W., Sego, D.C., Stahl, R.P., *Journal of cold regions engineering,* Sep. 1996, 10(3), p.149-162, 10 refs.

Pile structures, Pile load tests, Permafrost beneath structures, Compressive properties, Dislocations (materials), Earth fills, Grouting, Frozen ground mechanics, Saline soils

50-6428

Proceedings.

International Symposium on Thermal Engineering and Sciences for Cold Regions, 5th, Ottawa, May 19-22, 1996, Lee, Y., ed, Hallett, W.L.H., ed, Ottawa, University, Department of Mechanical Engineering, 1996, 522p. (2 vols.), Refs. passim. Consists of the main proceedings and a supplement containing 4 delayed papers not included in the main proceedings. For selected papers see 50-6429 through 50-6497.

Heat transfer, Heat recovery, Phase transformations, Liquid solid interfaces, Thermal analysis, Ice formation, Ice heat flux, Ice solid interface, Ice water interface, Soil freezing, Frozen ground thermodynamics

50-6429

Heat balance integral method and freezing problems.

Lunardini, V.J., MP 3879, International Symposium on Thermal Engineering and Sciences for Cold Regions, 5th, Ottawa, May 19-22, 1996. Proceedings. Edited by Y. Lee and W.L.H. Hallett, Ottawa, University, Department of Mechanical Engineering, 1996, p.1-21, 53 refs.

Heat balance, Heat transfer, Heat flux, Thermal conductivity, Thermal diffusion, Phase transformations, Liquid solid interfaces, Boundary value problems, Analysis (mathematics)

This review will examine the approximate technique called the heat balance integral method. The theory behind the method is detailed and appropriate general relations are derived. The method is illustrated by some simple non-phase-change problems and by application to the Neumann problem. These introductory examples illustrate the power and some of the limitations of this approximation. Several methods to broaden the application or increase the accuracy of the basic heat balance integral method are then discussed. Finally, the heat balance integral is applied to a number of important phase-change problems in Cartesian and curvilinear coordinates.

50-6430

Large scale motion and temperature distributions in land based ice shields—a review.

Hutter, K., Calov, R., International Symposium on Thermal Engineering and Sciences for Cold Regions, 5th, Ottawa, May 19-22, 1996. Proceedings. Edited by Y. Lee and W.L.H. Hallett, Ottawa, University, Department of Mechanical Engineering, 1996, p.22-46, 183 refs.

Ice sheets, Glacier flow, Glacier heat balance, Glacial meteorology, Glacier ice, Ice heat flux, Ice temperature, Ice thermal properties, Mathematical models

50-6431

Micro-solidification of solutions with supercooling.

Hayashi, Y., International Symposium on Thermal Engineering and Sciences for Cold Regions, 5th, Ottawa, May 19-22, 1996. Proceedings. Edited by Y. Lee and W.L.H. Hallett, Ottawa, University, Department of Mechanical Engineering, 1996, p.47-56, 8 refs.

Supercooling, Solidification, Heat transfer, Phase transformations, Liquid solid interfaces, Solid phases, Liquid phases, Microstructure

50-6432

Oil and gas development challenges in the Russian Arctic.

Ruzhanskiĭ, V.E., Jones, K.W., International Symposium on Thermal Engineering and Sciences for Cold Regions, 5th, Ottawa, May 19-22, 1996. Proceedings. Edited by Y. Lee and W.L.H. Hallett, Ottawa, University, Department of Mechanical Engineering, 1996, p.57-70, 9 refs.

Gas pipelines, Permafrost beneath structures, Permafrost preservation, Permafrost control, Saline soils, Soil stabilization, Frozen ground strength, Ground ice, Russia—Yamal Peninsula

50-6433

History of cold regions heat transfer: chronology.

Cheng, K.C., Yen, Y.C., MP 3880, International Symposium on Thermal Engineering and Sciences for Cold Regions, 5th, Ottawa, May 19-22, 1996. Proceedings. Edited by Y. Lee and W.L.H. Hallett, Ottawa, University, Department of Mechanical Engineering, 1996, p.71-88, 19 refs. + historical citations from 1250 to 1995.

Heat transfer, Phase transformations, Ice formation, Cold weather construction, Low temperature research, Research projects, Bibliographies, History

An overview of the subject of cold regions heat transfer is presented in the form of a classification of heat transfer phenomena based on ice formation in air, water on the surface of the earth, ground, and life and other problems. A chronology of the historical developments of the theory of heat is also presented to provide some historical perspectives. Some observations on the history of heat transfer from the viewpoint of temperature difference are made.

50-6434

Application of a polythermal ice sheet model to the antarctic ice sheet: steady-state solution and response to Milanković cycles.

Hansen, I., Greve, R., Hutter, K., International Symposium on Thermal Engineering and Sciences for Cold Regions, 5th, Ottawa, May 19-22, 1996. Proceedings. Edited by Y. Lee and W.L.H. Hallett, Ottawa, University, Department of Mechanical Engineering, 1996, p.89-96, 9 refs.

Ice sheets, Glacier heat balance, Glacier mass balance, Glacial meteorology, Glacier oscillation, Ice heat flux, Ice age theory, Computerized simulation, Antarctica

Several computations with the authors' three-dimensional polythermal ice sheet model SICOPOLIS are performed for the Antarctic Ice Sheet. The distinctive feature of this model is the detailed consideration of the basal temperate ice layer, in which the water content and its impact on the ice viscosity are computed; its transition surface to the cold ice region is treated by accounting for the continuum-mechanical jump conditions that hold on this interface. The presented simulations cover two types of scenarios, namely (i) a steady-state simulation under present climate conditions, and (ii) sinusoidal Milankovitch-period forcing with the three Milankovitch periods of 10, 40 and 100 thousand years, respectively. (Auth.)

50-6435

Greenland ice sheet: flow, temperature and geometry in response to various climate scenarios.

Calov, R., Hutter, K., International Symposium on Thermal Engineering and Sciences for Cold Regions, 5th, Ottawa, May 19-22, 1996. Proceedings. Edited by Y. Lee and W.L.H. Hallett, Ottawa, University, Department of Mechanical Engineering, 1996, p.97-107, 13 refs.

Ice sheets, Glacier flow, Glacier heat balance, Glacier mass balance, Glacial meteorology, Glacier oscillation, Paleoclimatology, Global change, Computerized simulation, Greenland

50-6436

Stability of water flow in glaciers.

Szilder, K., Lozowski, E.P., International Symposium on Thermal Engineering and Sciences for Cold Regions, 5th, Ottawa, May 19-22, 1996. Proceedings. Edited by Y. Lee and W.L.H. Hallett, Ottawa, University, Department of Mechanical Engineering, 1996, p.108-115, 6 refs.

Glacial hydrology, Glacier melting, Subglacial drainage, Glacial lakes, Icebound lakes, Ice dams, Ice creep, Lake bursts, Water flow, Mathematical models

50-6437

Influence of a structure of snow pack on biosystems in regions of severe climate.

Golubev, V.N., Seliverstov, IU.G., International Symposium on Thermal Engineering and Sciences for Cold Regions, 5th, Ottawa, May 19-22, 1996. Proceedings. Edited by Y. Lee and W.L.H. Hallett, Ottawa, University, Department of Mechanical Engineering, 1996, p.116-120, 12 refs.

Snow cover structure, Snow cover effect, Ecology, Ecosystems, Cold weather survival

50-6438

Investigation of the stress development during cryogenic pipe freezing.

Keary, A.C., Bowen, R.J., Syngellakis, S., International Symposium on Thermal Engineering and Sciences for Cold Regions, 5th, Ottawa, May 19-22, 1996. Proceedings. Edited by Y. Lee and W.L.H. Hallett, Ottawa, University, Department of Mechanical Engineering, 1996, p.121-126, 10 refs.

Water pipes, Pipeline freezing, Artificial freezing, Ice formation, Ice solid interface, Ice pressure, Ice loads, Thermal stresses

50-6439

Annual variation of the temperature field in a concrete dam.

Daoud, M., Galanis, N., Ballivy, G., International Symposium on Thermal Engineering and Sciences for Cold Regions, 5th, Ottawa, May 19-22, 1996. Proceedings. Edited by Y. Lee and W.L.H. Hallett, Ottawa, University, Department of Mechanical Engineering, 1996, p.127-132, 11 refs.

Dams, Concrete freezing, Concrete durability, Frost action, Ice loads, Thermal stresses

50-6440

Thermal design of integrated district heating/municipal services systems for northern communities.

Reeve, H.E., Snoek, C.W., Hallett, W.L.H., International Symposium on Thermal Engineering and Sciences for Cold Regions, 5th, Ottawa, May 19-22, 1996. Proceedings. Edited by Y. Lee and W.L.H. Hallett, Ottawa, University, Department of Mechanical Engineering, 1996, p.133-138, 5 refs.

Utilities, Heat pipes, Heat loss, Heat recovery, Thermal insulation, Water pipelines, Pipeline freezing, Frost protection, Cold weather construction

50-6441

Calculated properties of pure and saline water near the temperature of maximum density.

Kukulka, D.J., Mollendorf, J.C., International Symposium on Thermal Engineering and Sciences for Cold Regions, 5th, Ottawa, May 19-22, 1996. Proceedings. Edited by Y. Lee and W.L.H. Hallett, Ottawa, University, Department of Mechanical Engineering, 1996, p.139-146, 14 refs.

Sea water, Water temperature, Water pressure, Water structure, Density (mass/volume), Salinity, Thermal expansion, Specific heat, Mathematical models

50-6442

Design, building and testing of a latent heat thermal energy storage element.

Millette, J., Lacroix, M., Galanis, N., International Symposium on Thermal Engineering and Sciences for Cold Regions, 5th, Ottawa, May 19-22, 1996. Proceedings. Edited by Y. Lee and W.L.H. Hallett, Ottawa, University, Department of Mechanical Engineering, 1996, p.148-153, 4 refs.

Latent heat, Heat transfer, Heat sinks, Heat sources, Heat recovery, Electric heating, Utilities

50-6443

Thermal performance of latent heat thermal energy storage system using spherical capsules.

Saitoh, T., Kato, H., International Symposium on Thermal Engineering and Sciences for Cold Regions, 5th, Ottawa, May 19-22, 1996. Proceedings. Edited by Y. Lee and W.L.H. Hallett, Ottawa, University, Department of Mechanical Engineering, 1996, p.154-159, 17 refs.

Latent heat, Heat transfer, Heat sinks, Heat recovery, Phase transformations, Thermal analysis, Mathematical models

50-6444

Transient behavior of a hybrid system of latent heat storage and spray flash evaporation.

Miyatake, O., Noda, H., Kabir, M.E., Sugihara, K., Nagasato, Y., International Symposium on Thermal Engineering and Sciences for Cold Regions, 5th, Ottawa, May 19-22, 1996. Proceedings. Edited by Y. Lee and W.L.H. Hallett, Ottawa, University, Department of Mechanical Engineering, 1996, p.160-165, 3 refs.

Latent heat, Heat transfer, Heat sinks, Heat recovery, Phase transformations, Thermal analysis, Mathematical models

50-6445

Three dimensional modelling of a soil heat exchanger-storage system for greenhouses.

Gauthier, C., Lacroix, M., International Symposium on Thermal Engineering and Sciences for Cold Regions, 5th, Ottawa, May 19-22, 1996. Proceedings. Edited by Y. Lee and W.L.H. Hallett, Ottawa, University, Department of Mechanical Engineering, 1996, p.166-171, 16 refs.

Heat pipes, Soil air interface, Heat transfer, Heat recovery, Thermal analysis, Mathematical models

50-6446

Response control and performance estimation of capsule-type thermal energy storage system.

Ishikawa, M., Hirata, T., Tamaki, H., International Symposium on Thermal Engineering and Sciences for Cold Regions, 5th, Ottawa, May 19-22, 1996. Proceedings. Edited by Y. Lee and W.L.H. Hallett, Ottawa, University, Department of Mechanical Engineering, 1996, p.172-177, 9 refs.

Latent heat, Heat transfer, Heat sinks, Heat recovery, Phase transformations, Thermal analysis, Mathematical models

50-6447

Tube spacing effects on the heat transfer and ice volume performance characteristics of staggered and in-line ice-on-tube bank designs.

Intemann, P.A., Kazmierczak, M., International Symposium on Thermal Engineering and Sciences for Cold Regions, 5th, Ottawa, May 19-22, 1996. Proceedings. Edited by Y. Lee and W.L.H. Hallett, Ottawa, University, Department of Mechanical Engineering, 1996, p.178-186, 11 refs.

Pipes (tubes), Heat transfer, Ice solid interface, Ice accretion, Ice thermal properties, Ice heat flux, Ice refrigeration, Artificial freezing, Ice makers, Mathematical models

50-6448

Premelt heating, conduction and natural convection controlled melting aided storage of thermal energy in phase-change stores subjected to convective heat addition.

Prasad, A., Sinha, D.K., International Symposium on Thermal Engineering and Sciences for Cold Regions, 5th, Ottawa, May 19-22, 1996. Proceedings. Edited by Y. Lee and W.L.H. Hallett, Ottawa, University, Department of Mechanical Engineering, 1996, p.187-195, 13 refs.

Heat transfer, Heat sinks, Heat recovery, Melting, Phase transformations, Liquid solid interfaces, Thermal analysis, Mathematical models

50-6449

Study on the behaviour of the direct contact melting under unsteady condition.

Saito, A., Kumano, H., Okawa, S., Yamashita, K., International Symposium on Thermal Engineering and Sciences for Cold Regions, 5th, Ottawa, May 19-22, 1996. Proceedings. Edited by Y. Lee and W.L.H. Hallett, Ottawa, University, Department of Mechanical Engineering, 1996, p.196-201, 5 refs.

Melting, Heat transfer, Phase transformations, Liquid solid interfaces, Liquid phases, Films, Thermal analysis, Mathematical models

50-6450

Experimental study of the melting from discrete heat sources in a vertical enclosure.

Duong, T., Lacroix, M., Mercadier, Y., Galanis, N., Laneville, A., International Symposium on Thermal Engineering and Sciences for Cold Regions, 5th, Ottawa, May 19-22, 1996. Proceedings. Edited by Y. Lee and W.L.H. Hallett, Ottawa, University, Department of Mechanical Engineering, 1996, p.202-206, 2 refs.

Melting, Heat transfer, Latent heat, Heat sources, Heat recovery, Phase transformations, Liquid solid interfaces

50-6451

Direct contact melting process on a curved wall coated with a porous layer.

Oka, M., Hasegawa, E., International Symposium on Thermal Engineering and Sciences for Cold Regions, 5th, Ottawa, May 19-22, 1996. Proceedings. Edited by Y. Lee and W.L.H. Hallett, Ottawa, University, Department of Mechanical Engineering, 1996, p.207-212, 10 refs.

Melting, Latent heat, Heat transfer, Heat sinks, Heat recovery, Phase transformations, Liquid solid interfaces, Liquid phases, Thermal analysis, Mathematical models

50-6452

Floating convection induced by the freezing of seawater.

Hadji, L., International Symposium on Thermal Engineering and Sciences for Cold Regions, 5th, Ottawa, May 19-22, 1996. Proceedings. Edited by Y. Lee and W.L.H. Hallett, Ottawa, University, Department of Mechanical Engineering, 1996, p.213-218, 8 refs.

Sea water freezing, Ice formation, Ice water interface, Ice heat flux, Air ice water interaction, Polynyas, Convection, Mathematical models

The ice cover that forms during the freezing of antarctic water acts as an insulating barrier that inhibits the release of oceanic stored heat into the atmosphere. This heat stored within moderately deep ocean water comes from the latent heat released during the freezing process and from absorbed solar radiation. During the formation of either coastal or open-ocean polynyas, the cold salty water that underlies the seawater-ice interface becomes suddenly open to the frigid atmospheric air and an upward heat flux ensues. To quantify the role of convection in the sea-ice-atmosphere interaction in polar regions, the authors have carried out a detailed study of the coupling between thermosolutal convection and solidification in a layer of seawater. These convective flows result from the partial solidification of seawater from above. A mathematical model based on the conservation equations of heat, salt, mass and momentum is derived. Several parameters appear in the mathematical formulation, and only one, the Rayleigh number, plays the role of bifurcation parameter. The study is numerical and is based on the finite difference method. (Auth. mod.)

50-6453

Observations of the three-dimensional natural convective flow about a melting ice cylinder.

Oosthuizen, P.H., Xu, Z., International Symposium on Thermal Engineering and Sciences for Cold Regions, 5th, Ottawa, May 19-22, 1996. Proceedings. Edited by Y. Lee and W.L.H. Hallett, Ottawa, University, Department of Mechanical Engineering, 1996, p.219-224, 12 refs.

Ice melting, Ice water interface, Ice heat flux, Water flow, Convection

50-6454

Prediction of oscillatory convection during melting of ice in a vertical rectangular enclosure.

Ho, C.J., Yang, S.L., Chu, C.H., International Symposium on Thermal Engineering and Sciences for Cold Regions, 5th, Ottawa, May 19-22, 1996. Proceedings. Edited by Y. Lee and W.L.H. Hallett, Ottawa, University, Department of Mechanical Engineering, 1996, p.225-230, 20 refs.

Ice melting, Ice water interface, Ice heat flux, Water flow, Convection, Mathematical models

50-6455

Effects of natural and forced convection on freezing around a horizontal cylinder in a porous medium saturated with aqueous solution.

Okada, M., Tsuchiya, K., International Symposium on Thermal Engineering and Sciences for Cold Regions, 5th, Ottawa, May 19-22, 1996. Proceedings. Edited by Y. Lee and W.L.H. Hallett, Ottawa, University, Department of Mechanical Engineering, 1996, p.231-236, 8 refs.

Heat transfer, Convection, Phase transformations, Liquid solid interfaces, Solid phases, Solidification, Thermal analysis, Mathematical models

50-6456

Melting heat transfer of a horizontal ice cylinder immersed within an immiscible liquid.

Yamada, M., Fukusako, S., Sayed, M.E.B., International Symposium on Thermal Engineering and Sciences for Cold Regions, 5th, Ottawa, May 19-22, 1996. Proceedings. Edited by Y. Lee and W.L.H. Hallett, Ottawa, University, Department of Mechanical Engineering, 1996, p.237-246, 16 refs.

Ice melting, Ice water interface, Ice heat flux, Liquid solid interfaces, Heat transfer

50-6457

Melting process inside a horizontal cylinder filled with phase change material including subcooling effects.

Back, Y.R., Lee, J.H., Ryu, D.S., Hur, Y.J., International Symposium on Thermal Engineering and Sciences for Cold Regions, 5th, Ottawa, May 19-22, 1996. Proceedings. Edited by Y. Lee and W.L.H. Hallett, Ottawa, University, Department of Mechanical Engineering, 1996, p.247-252, 10 refs.

Melting, Heat transfer, Phase transformations, Liquid solid interfaces, Solid phases, Liquid phases, Thermal analysis, Mathematical models

50-6458

Modelling of icing on structures from fresh and light salt water.

Frolov, A.D., Golubev, V.N., International Symposium on Thermal Engineering and Sciences for Cold Regions, 5th, Ottawa, May 19-22, 1996. Proceedings. Edited by Y. Lee and W.L.H. Hallett, Ottawa, University, Department of Mechanical Engineering, 1996, p.253-257, 7 refs.

Ice accretion, Ice solid interface, Salt ice, Ice salinity

50-6459

Interface location and flow visualization in steady, pure water-ice systems using shadowgraphy and dye injection.

Elkouh, N., Baliga, B.R., International Symposium on Thermal Engineering and Sciences for Cold Regions, 5th, Ottawa, May 19-22, 1996. Proceedings. Edited by Y. Lee and W.L.H. Hallett, Ottawa, University, Department of Mechanical Engineering, 1996, p.258-263, 10 refs.

Ice water interface, Ice formation, Freezing front, Water flow, Ice optics, Photographic techniques, Image processing

50-6460

Analysis of ice-formation in a stenotic tube.

Suh, J.S., Ro, S.T., Kim, M.G., International Symposium on Thermal Engineering and Sciences for Cold Regions, 5th, Ottawa, May 19-22, 1996. Proceedings. Edited by Y. Lee and W.L.H. Hallett, Ottawa, University, Department of Mechanical Engineering, 1996, p.264-269, 9 refs.

Pipeline freezing, Ice formation, Ice water interface, Ice solid interface, Water flow, Pipe flow, Heat transfer, Mathematical models

50-6461

Experimental investigation of the freeze shut of a convectively cooled parallel plate channel.

Lipnicki, Z., Weigand, B., International Symposium on Thermal Engineering and Sciences for Cold Regions, 5th, Ottawa, May 19-22, 1996. Proceedings. Edited by Y. Lee and W.L.H. Hallett, Ottawa, University, Department of Mechanical Engineering, 1996, p.270-275, 5 refs.

Ice formation, Freezing front, Ice water interface, Ice solid interface, Water flow, Laminar flow, Heat transfer

50-6462

Augmentation or suppression of ice accumulation on a cold flat-plate in water-flow channel.

Hirata, T., Ishikawa, M., Kitagawa, I., International Symposium on Thermal Engineering and Sciences for Cold Regions, 5th, Ottawa, May 19-22, 1996. Proceedings. Edited by Y. Lee and W.L.H. Hallett, Ottawa, University, Department of Mechanical Engineering, 1996, p.276-281, 2 refs.

Ice formation, Ice accretion, Ice control, Ice solid interface, Ice water interface, Ice heat flux, Heat transfer, Water flow, Mathematical models

50-6463

Freezing of liquids within fast growing thermally developing region of laminar flow inside a uniform heat flux cooled circular duct.

Prasad, A., Choudhary, B.D., International Symposium on Thermal Engineering and Sciences for Cold Regions, 5th, Ottawa, May 19-22, 1996. Proceedings. Edited by Y. Lee and W.L.H. Hallett, Ottawa, University, Department of Mechanical Engineering, 1996, p.282-289, 17 refs.

Heat transfer, Heat flux, Solidification, Phase transformations, Liquid solid interfaces, Liquid cooling, Laminar flow, Pipe flow, Thermal analysis, Mathematical models

50-6464

Development of models of freezing and convection during cryogenic pipe freezing.

Keary, A.C., Bowen, R.J., International Symposium on Thermal Engineering and Sciences for Cold Regions, 5th, Ottawa, May 19-22, 1996. Proceedings. Edited by Y. Lee and W.L.H. Hallett, Ottawa, University, Department of Mechanical Engineering, 1996, p.290-295, 7 refs.

Pipeline freezing, Artificial freezing, Ice formation, Ice water interface, Ice solid interface, Pipe flow, Flow control, Heat transfer

50-6465

Forced-convection melting characteristics of liquid ice in a horizontal rectangular duct.

Yamada, M., Fukusako, S., Kawanami, T., International Symposium on Thermal Engineering and Sciences for Cold Regions, 5th, Ottawa, May 19-22, 1996. Proceedings. Edited by Y. Lee and W.L.H. Hallett, Ottawa, University, Department of Mechanical Engineering, 1996, p.296-305, 19 refs.

Ice thermal properties, Ice heat flux, Ice melting, Heat transfer coefficient, Phase transformations, Liquid solid interfaces, Slush, Heat sinks, Heat recovery

50-6466

Experimental study of the heat transfer during the freezing process of water in a horizontal cylinder.

Yim, C.S., Kim, Y.J., Cho, N.C., Kim, Y.K., Lee, J.Y., International Symposium on Thermal Engineering and Sciences for Cold Regions, 5th, Ottawa, May 19-22, 1996. Proceedings. Edited by Y. Lee and W.L.H. Hallett, Ottawa, University, Department of Mechanical Engineering, 1996, p.306-311, 7 refs.

Ice formation, Ice thermal properties, Ice heat flux, Ice refrigeration, Ice solid interface, Ice water interface, Heat transfer, Phase transformations

50-6467

Hot water drilling of large diameter holes in cold ice.

Koci, B.R., Nagornov, O.V., Zagorodnov, V.S., Kelley, J.J., International Symposium on Thermal Engineering and Sciences for Cold Regions, 5th, Ottawa, May 19-22, 1996. Proceedings. Edited by Y. Lee and W.L.H. Hallett, Ottawa, University, Department of Mechanical Engineering, 1996, p.312-317, 12 refs.

Ice drills, Thermal drills, Drilling, Boreholes, Borehole instruments, Radiation measurement, Radiation measuring instruments

The Antarctic Muon and Neutrino Detector Array (AMANDA) requires large diameter (0.6 m) holes to a depth of nearly 2 km to install photodetectors in ice. During the 1993-94 field season a Hot Water Drilling (HWD) system was used to drill 4 holes to 1 km depth. The drilling process and its thermal effects in ambient ice were modeled. The calculated models were matched against the measured data collected during the drilling and freezing process. These models indicate a potential increase of 50% in drilling rate over the present HWD. This paper describes the AMANDA HWD system, the drilling log data, and models which allow users to calculate an optimal drilling schedule, time of closure, and shape of the hole. (Auth.)

50-6468

Thermal performance of a planar latent heat storage unit for load shifting.

Laouadi, A., Lacroix, M., Galanis, N., International Symposium on Thermal Engineering and Sciences for Cold Regions, 5th, Ottawa, May 19-22, 1996. Proceedings. Edited by Y. Lee and W.L.H. Hallett, Ottawa, University, Department of Mechanical Engineering, 1996, p.318-323, 5 refs.

Latent heat, Heat transfer, Heat sinks, Heat recovery, Phase transformations, Liquid solid interfaces, Thermal analysis, Mathematical models

50-6469

Formation of ice layers in a straight walled, rectangular diffuser.

Neumann, S.O., Beer, H., International Symposium on Thermal Engineering and Sciences for Cold Regions, 5th, Ottawa, May 19-22, 1996. Proceedings. Edited by Y. Lee and W.L.H. Hallett, Ottawa, University, Department of Mechanical Engineering, 1996, p.324-330, 16 refs.

Ice formation, Ice thermal properties, Ice refrigeration, Ice heat flux, Ice water interface, Ice solid interface, Heat transfer, Turbulent exchange, Thermal analysis, Mathematical models

50-6470

Experimental study on the solidification and melting processes of water around a vertical heat transfer plate with stud fins.

Hirasawa, Y., Takegoshi, E., Dong, C., International Symposium on Thermal Engineering and Sciences for Cold Regions, 5th, Ottawa, May 19-22, 1996. Proceedings. Edited by Y. Lee and W.L.H. Hallett, Ottawa, University, Department of Mechanical Engineering, 1996, p.331-336, 4 refs.

Ice formation, Ice melting, Ice heat flux, Ice solid interface, Ice water interface, Liquid solid interfaces, Phase transformations, Heat transfer

50-6471

Local and overall convective heat transfer of rotating ice spheroids with hemispherical surface roughness.

Zheng, G.G., List, R., International Symposium on Thermal Engineering and Sciences for Cold Regions, 5th, Ottawa, May 19-22, 1996. Proceedings. Edited by Y. Lee and W.L.H. Hallett, Ottawa, University, Department of Mechanical Engineering, 1996, p.337-342, 13 refs.

Hailstone growth, Hailstone structure, Ice crystal adhesion, Coalescence, Convection, Heat transfer

50-6472

Analysis of the transient response of a thermal energy storage unit.

Kuznetsov, A.V., International Symposium on Thermal Engineering and Sciences for Cold Regions, 5th, Ottawa, May 19-22, 1996. Proceedings. Edited by Y. Lee and W.L.H. Hallett, Ottawa, University, Department of Mechanical Engineering, 1996, p.343-348, 11 refs.

Latent heat, Heat sinks, Heat recovery, Heat transfer, Phase transformations, Liquid solid interfaces, Porous materials, Thermal analysis, Mathematical models

50-6473

Numerical study of heat transfer and flow of natural convection in an enclosure with a heat-generating conducting body.

Oh, J.Y., Ha, M.Y., Kim, K.C., International Symposium on Thermal Engineering and Sciences for Cold Regions, 5th, Ottawa, May 19-22, 1996. Proceedings. Edited by Y. Lee and W.L.H. Hallett, Ottawa, University, Department of Mechanical Engineering, 1996, p.349-355, 7 refs.

Heat sources, Heat recovery, Heat transfer, Liquid solid interfaces, Convection, Thermal conductivity, Thermal analysis, Mathematical models

50-6474

Method for determining the thermal contact resistance of the thermal probe in situ.

Rolle, K.C., Rank, M., International Symposium on Thermal Engineering and Sciences for Cold Regions, 5th, Ottawa, May 19-22, 1996. Proceedings. Edited by Y. Lee and W.L.H. Hallett, Ottawa, University, Department of Mechanical Engineering, 1996, p.356-361, 10 refs.

Thermal conductivity, Temperature measurement, Heat transfer, Thermistors

50-6475

Research on a thermal conductivity measurement of supercooled water.

Saito, A., Okawa, S., Shimamoto, D., International Symposium on Thermal Engineering and Sciences for Cold Regions, 5th, Ottawa, May 19-22, 1996. Proceedings. Edited by Y. Lee and W.L.H. Hallett, Ottawa, University, Department of Mechanical Engineering, 1996, p.362-367, 13 refs.

Supercooling, Thermal conductivity, Water temperature, Temperature measurement, Ice formation, Ice water interface, Liquid phases, Heat transfer

50-6476

Determination of thermal properties of foam covers used for remediation of degraded permafrost.

Feklistov, V.N., Mel'nikov, V.P., Nesterov, A.N., International Symposium on Thermal Engineering and Sciences for Cold Regions, 5th, Ottawa, May 19-22, 1996. Proceedings. Edited by Y. Lee and W.L.H. Hallett, Ottawa, University, Department of Mechanical Engineering, 1996, p.368-372, 6 refs.

Permafrost preservation, Permafrost control, Soil stabilization, Thermal insulation, Land reclamation, Cellular plastics, Urea, Thermal conductivity

50-6477

Modelling of frost formation in rotary heat exchangers.

Bilodeau, S., Brousseau, P., Mercadier, Y., Lacroix, M., International Symposium on Thermal Engineering and Sciences for Cold Regions, 5th, Ottawa, May 19-22, 1996. Proceedings. Edited by Y. Lee and W.L.H. Hallett, Ottawa, University, Department of Mechanical Engineering, 1996, p.373-378, 8 refs.

Ice formation, Ice accretion, Hoarfrost, Ice solid interface, Ice air interface, Ice vapor interface, Heat transfer, Ventilation, Mathematical models

50-6478

Experimental study on heat transfer of air flow in an inclined channel with a V-corrugated upper plate heated by radiation.

Ali, A.H.H., Saito, H., Kishinami, K., Kamata, N., Suzuki, J., International Symposium on Thermal Engineering and Sciences for Cold Regions, 5th, Ottawa, May 19-22, 1996. Proceedings. Edited by Y. Lee and W.L.H. Hallett, Ottawa, University, Department of Mechanical Engineering, 1996, p.379-384, 8 refs.

Heat sources, Heat flux, Heat transfer, Radiant heating, Air flow, Solar radiation

50-6479

Oscillations and the migratory-thermal stability of the freezing phase front in porous media.

Bronfenbrener, L., Korin, E., International Symposium on Thermal Engineering and Sciences for Cold Regions, 5th, Ottawa, May 19-22, 1996. Proceedings. Edited by Y. Lee and W.L.H. Hallett, Ottawa, University, Department of Mechanical Engineering, 1996, p.387-393, 6 refs.

Soil freezing, Freezing front, Porous materials, Ice solid interface, Phase transformations, Heat transfer, Stefan problem, Mathematical models

50-6480

Simultaneous infiltration and heat transfer into frozen soil.

Zhao, L.T., Gray, D.M., Male, D.H., International Symposium on Thermal Engineering and Sciences for Cold Regions, 5th, Ottawa, May 19-22, 1996. Proceedings. Edited by Y. Lee and W.L.H. Hallett, Ottawa, University, Department of Mechanical Engineering, 1996, p.394-399, 10 refs.

Snow cover effect, Snow heat flux, Snowmelt, Seepage, Soil water migration, Frozen ground thermodynamics, Heat transfer, Mathematical models

50-6481

Distinguishing features of the phase transformations in saline frozen soils.

Frolov, A.D., International Symposium on Thermal Engineering and Sciences for Cold Regions, 5th, Ottawa, May 19-22, 1996. Proceedings. Edited by Y. Lee and W.L.H. Hallett, Ottawa, University, Department of Mechanical Engineering, 1996, p.400-406, 24 refs.

Saline soils, Soil structure, Soil freezing, Frozen ground thermodynamics, Frozen ground chemistry

50-6482

Climatic warming and the degradation of warm permafrost.

Lunardini, V.J., MP 3881, International Symposium on Thermal Engineering and Sciences for Cold Regions, 5th, Ottawa, May 19-22, 1996. Proceedings. Edited by Y. Lee and W.L.H. Hallett, Ottawa, University, Department of Mechanical Engineering, 1996, p.407-414, 18 refs.

Permafrost distribution, Permafrost thickness, Permafrost forecasting, Permafrost heat balance, Permafrost heat transfer, Permafrost thermal properties, Frozen ground temperature, Ground thawing, Global warming, Mathematical models

Permafrost is a widespread constituent of the terrestrial environment. It is, by definition, dependent upon the ambient temperature for its existence and properties; hence it is very sensitive to climatic changes. Simple relations based upon conduction heat transfer, with thawing and geothermal heat flow, are presented to predict the transient effects of surface temperature increases on the thermal state of permafrost. The results indicate that, based on the usual global warming scenarios, relatively small amounts of permafrost will disappear within 50-100 years. This is specifically shown for the most thermally sensitive cases, that is, warm or relict permafrost.

50-6483

Role of soil microstructure in the geotechnical properties of freezing soils.

White, T.L., Williams, P.J., International Symposium on Thermal Engineering and Sciences for Cold Regions, 5th, Ottawa, May 19-22, 1996. Proceedings. Edited by Y. Lee and W.L.H. Hallett, Ottawa, University, Department of Mechanical Engineering, 1996, p.415-425, 14 refs.

Soil freezing, Frost action, Soil structure, Microstructure, Frozen ground thermodynamics, Soil water migration

50-6484

Calculation of freezing soil's textures with consideration of compressibility unfrozen zone.

Gorelik, IA.B., Kolunin, V.S., International Symposium on Thermal Engineering and Sciences for Cold Regions, 5th, Ottawa, May 19-22, 1996. Proceedings. Edited by Y. Lee and W.L.H. Hallett, Ottawa, University, Department of Mechanical Engineering, 1996, p.426-431, 8 refs.

Soil freezing, Freezing front, Frozen ground thermodynamics, Frozen ground strength, Frozen ground compression, Soil texture

50-6485

Mathematical model and the Takashi model of soil freezing.

Nakano, Y., MP 3882, International Symposium on Thermal Engineering and Sciences for Cold Regions, 5th, Ottawa, May 19-22, 1996. Proceedings. Edited by Y. Lee and W.L.H. Hallett, Ottawa, University, Department of Mechanical Engineering, 1996, p.432-447, 42 refs.

Soil freezing, Freezing front, Frost penetration, Frost heave, Soil water migration, Loams, Frozen ground thermodynamics, Frozen ground temperature, Frozen ground strength, Frozen ground compression, Mathematical models

Around 1980 the Takashi model of soil freezing was introduced and today this model is the standard of engineering design in Japan. According to this model, the freezing characteristics of a given soil are described by two empirical formulas that specify the dependence of the frost heave ratio and the water intake ratio on given thermal and hydraulic conditions. In this work two theoretical formulas approximately corresponding to the Takashi's empirical formulas are derived by using the mathematical model called M_1. The theoretical formulas are compared with the empirical ones for Kanto loam. The agreement between them is found to be satisfactory.

50-6486

Cryogenic screens and collectors in permafrost.

Olovin, B.A., International Symposium on Thermal Engineering and Sciences for Cold Regions, 5th, Ottawa, May 19-22, 1996. Proceedings. Edited by Y. Lee and W.L.H. Hallett, Ottawa, University, Department of Mechanical Engineering, 1996, p.448-452, 4 refs.

Permafrost distribution, Permafrost beneath rivers, Permafrost structure, Permafrost hydrology, Frozen rock strength, Seepage, Permeability, Russia—Vilyuy River

50-6487

Ice adhesion near the melting point.

Kamata, Y., Mizuno, Y., Horiguchi, K., Yoshida, M., International Symposium on Thermal Engineering and Sciences for Cold Regions, 5th, Ottawa, May 19-22, 1996. Proceedings. Edited by Y. Lee and W.L.H. Hallett, Ottawa, University, Department of Mechanical Engineering, 1996, p.453-458, 9 refs.

Ice solid interface, Ice adhesion, Ice friction, Ice strength, Ice hardness, Ice temperature

50-6488

Review of modelling the thermodynamics of floating ice.

Savage, S.B., Sayed, M., Frederking, R.M.W., Squire, V.A., International Symposium on Thermal Engineering and Sciences for Cold Regions, 5th, Ottawa, May 19-22, 1996. Proceedings. Edited by Y. Lee and W.L.H. Hallett, Ottawa, University, Department of Mechanical Engineering, 1996, p.459-464, 9 refs.

Air ice water interaction, Ice heat flux, Ice growth, Sea ice distribution, Ice cover thickness, Ice conditions, Ice forecasting

50-6489

Current technology of snow melting system using heat pipes in Japan.

Sugihara, S., et al, International Symposium on Thermal Engineering and Sciences for Cold Regions, 5th, Ottawa, May 19-22, 1996. Proceedings. Edited by Y. Lee and W.L.H. Hallett, Ottawa, University, Department of Mechanical Engineering, 1996, p.465-470, 4 refs.

Artificial melting, Snow melting, Snow removal, Heat pipes, Heat transfer, Heat recovery, Road maintenance, Japan

50-6490

Heat pipes and heat pumps for cold regions applications.

Vasil'ev, L.L., International Symposium on Thermal Engineering and Sciences for Cold Regions, 5th, Ottawa, May 19-22, 1996. Proceedings. Edited by Y. Lee and W.L.H. Hallett, Ottawa, University, Department of Mechanical Engineering, 1996, p.471-476, 8 refs.

Heat pipes, Heat pumps, Heat recovery, Heat transfer, Geothermy

50-6491

Possibilities of non-traditional thermosyphonic device application for cold region technology.

Antoshko, IU.V., International Symposium on Thermal Engineering and Sciences for Cold Regions, 5th, Ottawa, May 19-22, 1996. Proceedings. Edited by Y. Lee and W.L.H. Hallett, Ottawa, University, Department of Mechanical Engineering, 1996, p.477-482, 9 refs.

Heat pipes, Heat sources, Heat recovery, Heat transfer

50-6492

Application of a snow melting system using heat pipes with electric cartridge heaters.

Egawa, H., Xiao, C.Y., Hamada, H., Tanaka, O., International Symposium on Thermal Engineering and Sciences for Cold Regions, 5th, Ottawa, May 19-22, 1996. Proceedings. Edited by Y. Lee and W.L.H. Hallett, Ottawa, University, Department of Mechanical Engineering, 1996, p.483-488, 2 refs.

Artificial melting, Snow melting, Snow removal, Heat pipes, Heat transfer, Heat recovery, Road maintenance, Japan

50-6493

Heat transfer in a two-phase closed thermosyphon: horizontal flat plate type.

Pioro, I.L., Park, H.J., Lee, Y., International Symposium on Thermal Engineering and Sciences for Cold Regions, 5th, Ottawa, May 19-22, 1996. Proceedings. Edited by Y. Lee and W.L.H. Hallett, Ottawa, University, Department of Mechanical Engineering, 1996, p.489-494, 1 ref.

Heat pipes, Heat transfer, Heat recovery, Heat sources

50-6494

Numerical investigation of soil freezing on the outside of a vertical two-phase closed thermosyphon.

Gu, W.B., Hu, H.Y., Wu, C.Z., International Symposium on Thermal Engineering and Sciences for Cold Regions, 5th, Ottawa, May 19-22, 1996. Proceedings. Edited by Y. Lee and W.L.H. Hallett, Ottawa, University, Department of Mechanical Engineering, 1996, p.495-500, 11 refs.

Soil freezing, Artificial freezing, Soil stabilization, Permafrost preservation, Heat pipes, Heat transfer, Phase transformations, Mathematical models

50-6495

Effect of the anomaly of the relationship between the linear expansion coefficient of frozen clay rock and temperature upon the tunnel walls stress condition.

Izakson, V.IU., International Symposium on Thermal Engineering and Sciences for Cold Regions, 5th, Ottawa, May 19-22, 1996. Proceedings. Supplement. Edited by Y. Lee and W.L.H. Hallett, Ottawa, University, Department of Mechanical Engineering, 1996, p.503-508, 2 refs.

Frozen rock strength, Frozen rock temperature, Rock excavation, Frozen ground thermodynamics, Frozen ground compression, Mine shafts, Tunnels, Thermal expansion, Thermal stresses, Mathematical models

50-6496

Adhesive properties of gas hydrates and ice.

Bondarev, E.A., Groĭsman, A.G., Savvin, A.Z., International Symposium on Thermal Engineering and Sciences for Cold Regions, 5th, Ottawa, May 19-22, 1996. Proceedings. Supplement. Edited by Y. Lee and W.L.H. Hallett, Ottawa, University, Department of Mechanical Engineering, 1996, p.511-515, 9 refs.

Ice solid interface, Ice adhesion, Ice strength, Hydrates, Mathematical models

50-6497

Mathematical model for calculating thermal conductivity of snow subject to metamorphism.

Gavril'ev, R.I., International Symposium on Thermal Engineering and Sciences for Cold Regions, 5th, Ottawa, May 19-22, 1996. Proceedings. Supplement. Edited by Y. Lee and W.L.H. Hallett, Ottawa, University, Department of Mechanical Engineering, 1996, p.516-521, 7 refs.

Snow cover structure, Metamorphism (snow), Snow thermal properties, Snow air interface, Snow heat flux, Snow hydrology, Thermal conductivity, Mathematical models

50-6498

Aviation weather: forces to be reckoned with.

Taylor, R.L., Command decisions series, Vol.1, Greenwich, CT, Belvoir Publications, Inc., 1991, 240p. (Pertinent p.36-95,180-235).

Aircraft icing, Accidents, Safety, Cold weather operation, Cold weather survival

50-6499

Antarctic journal of the United States, Vol.30, No.1-4.

U.S. National Science Foundation, Washington, D.C., 1995, 47p., Refs. passim. For selected papers see A-55631, A-55633, A-55640, B-55634, F-55632, F-55635 through F-55639 or 50-6500 through 50-6507.

Low temperature research, Glaciology, Environmental protection, Microbiology, Meteorological data

This issue contains 7 articles reporting on antarctic glaciological research and one on environmental protection and microbiology; an article describing activities at the Arctic and Antarctic Research Center during 1994-1995; and an article on a new committee for the oversight of antarctic research vessels. The rest of this issue consists mainly of news items concerning the National Science Foundation and the Antarctic Journal of the United States; a list of US support and science personnel wintering over at McMurdo, Amundsen-Scott and Palmer stations; the reorganization of the Office of Polar Programs; Foundation awards of funds for antarctic projects from Sep. 1994 through Aug. 1995; and weather summaries for McMurdo, Palmer and Amundsen-Scott for the period Nov. 1994 through Oct. 1995.

50-6500

Science news from The Ice: highlights from the 1994-1995 austral summer.

Simarski, L., *Antarctic journal of the United States,* 1995, 30(1-4), p.4-7.

Research projects, Fossils, Meteorological instruments, Algae, Sea ice, Ice cores, Antarctica—Seymour Island, Antarctica—Weddell Sea, Antarctica—Vostok Station

The highlights of the 1994-1995 summer research season provide information on the fossil discovery on Seymour I. of, among others, a gigantic mollusc and an oversized ancestor of the modern-day armadillo; a new instrument to study very high stratospheric clouds; an unusual display of autumn bloom in ice algae from the Weddell Sea; the ice drilling at Vostok Station passing the 3000-m depth; and the hunt for meteorites in Antarctica's icefields.

50-6501

Pegasus: a glacial-ice runway for wheeled flight operations at McMurdo Station.

Blaisdell, G.L., Lang, R.M., MP 3884, *Antarctic journal of the United States,* 1995, 30(1-4), p.7-10.

Ice runways, Cold weather construction, Glacier ice, Aircraft landing areas, Ice strength, Hardness tests, Test equipment, Construction equipment, Antarctica—McMurdo Station

The McMurdo Station glacial-ice runway was developed over a 5-year period and now provides access to heavy wheeled aircraft for much of the austral summer field season. Benefits of the runway include reduced wear and tear on airframes, more efficient use of aircraft and flight crews, less wasted time by science and support personnel, enhanced morale, assurance of stocking South Pole before station closings, increased efficiency for cargo handlers, and timely station close-out. Access by much of the world's aircraft and the potential for winter flights are also gained. To date, about 78 flights have operated from the glacial-ice runway yielding a savings of 39 flights.

50-6502

Arctic and Antarctic Research Center: support for research during 1994-1995.

Whritner, R.H., Nelson, E., Lubin, D., *Antarctic journal of the United States,* 1995, 30(1-4), p.10-12, 3 refs.

Low temperature research, Imaging, Spaceborne photography, Mapping, Sea ice distribution

Since 1988, the Arctic and Antarctic Research Center (AARC) at the Scripps Institution of Oceanography has maintained viable satellite data collection facilities for the polar regions. The AARC's direct involvement with research has encompassed a wide variety of disciplines, including atmospheric science, polar oceanography, sea-ice research, glaciology, geophysics, polar biology, and space science. An example of AARC support for biological research is illustrated in a figure, where collared emperor penguins have been tracked by ARGOS telemetry, and where this tracking is merged with advanced very high resolution radiometer (AVHRR) 1-2 km resolution, clear-sky images, to discern sea-ice conditions associated with the animals' migratory and feeding habits. Throughout 1994-95 the AARC has provided regular sea-ice mapping support to research cruises of the *Nathaniel B. Palmer.*

50-6503

Sea-ice development in the Ross, Amundsen and Bellingshausen Seas revealed by analysis of ice cores in late winter 1993 and 1994.

Jeffries, M.O., Cushing, S., Porter, M., *Antarctic journal of the United States,* 1995, 30(1-4), p.16-18, 7 refs.

Ice cores, Chemical analysis, Ice formation, Ice structure, Sea ice, Air ice water interaction, Antarctica—Ross Sea, Antarctica—Amundsen Sea, Antarctica—Bellingshausen Sea

In Aug. and Sep. 1993, the authors made the first comprehensive investigation of first-year sea-ice development in the Bellingshausen and eastern Amundsen seas. In Sep. and Oct. 1994, they investigated first-year sea-ice development in the western Amundsen and eastern Ross Seas. This article presents the results of the 1994 investigation and compares them with the 1993 results. Both data sets were obtained in late winter aboard the R/V *Nathaniel B. Palmer.* The 1993 and 1994 cruise tracks and sampling locations are illustrated in a figure.

50-6504

Sea-ice-and snow-thickness distributions in late winter 1993 and 1994 in the Ross, Amundsen, and Bellingshausen Seas.

Jeffries, M.O., Jaña, R., Li, S., McCullars, S., *Antarctic journal of the United States,* 1995, 30(1-4), p.18-21, 7 refs.

Sea ice, Ice cover thickness, Snow depth, Antarctica—Ross Sea, Antarctica—Amundsen Sea, Antarctica—Bellingshausen Sea

The sea-ice and snow-thickness distributions in the Bellingshausen and eastern Amundsen seas were studied for the first time during Aug. and Sep. 1993. The first investigation of the sea-ice and snow-thickness distribution in the western Amundsen and eastern Ross Seas was made in Sep. and Oct. 1994. This article presents the results of the 1994 study and compares the data with the 1993 measurements.

50-6505

Description of the snow cover on the winter sea ice of the Amundsen and Ross Seas.

Sturm, M., Morris, K., Massom, R., MP 3883, *Antarctic journal of the United States,* 1995, 30(1-4), p.21-24, 13 refs.

Snow depth, Sea ice, Ice cover thickness, Snow stratigraphy, Snow ice interface, Grain size, Snow cover, Antarctica—Amundsen Sea, Antarctica—Ross Sea

Combined snow and sea-ice studies were conducted from the R/V *Nathaniel B. Palmer* in the pack ice of the Amundsen and Ross seas between Sep. 10 and Oct. 21, 1994. In all, measurements were made in 139 snow pits and 21 trenches (mean depth: 32.4 cm). In total, 2,400 measurements of snow depth and snow-ice interface temperatures were made. In general, the snow cover comprised four distinctly different types of snow: soft or moderately hard fine-grained snow layers; depth hoar layers; icy layers, melt-clusters, and percolation columns; and new or recent snow. The icy features exhibited textures suggestive of formation during high winds.

50-6506

C-band radar backscatter from antarctic first-year sea ice: I. *In situ* scatterometer measurements.

Jeffries, M.O., Chuah, T.S., Morris, K., *Antarctic journal of the United States,* 1995, 30(1-4), p.24-26, 8 refs.

Sea ice, Synthetic aperture radar, Spaceborne photography, Ice physics, Backscattering, Antarctica—Bellingshausen Sea, Antarctica—Amundsen Sea

In Aug. and Sep. 1993, the R/V *Nathaniel B. Palmer* operated in the Bellingshausen and Amundsen seas in support of a study of sea-ice geophysics. This included an investigation of *in situ* radar backscatter variability from first-year ice using a scatterometer mounted on the ship and of backscatter variability in SAR images derived from data acquired by the ERS-1 satellite. This article describes some of the results of the *in situ* scatterometer measurements.

50-6507

C-band radar backscatter from antarctic first-year sea ice: II. ERS-1 SAR measurements.

Morris, K., Jeffries, M.O., *Antarctic journal of the United States,* 1995, 30(1-4), p.26-27, 8 refs.

Sea ice, Synthetic aperture radar, Spaceborne photography, Ice physics, Backscattering, Antarctica—Bellingshausen Sea, Antarctica—Amundsen Sea

Because some of the surface properties and processes of antarctic sea ice differ from those of arctic sea ice, one would expect the radar backscatter response to differ as well. These potential differences were the subject of an investigation in Aug. and Sep. 1993 when the R/V *Nathaniel B. Palmer* operated in the pack ice of the Bellingshausen and Amundsen seas. At the time the ship was in the ice, ERS-1 C-band, vertical-vertical (VV) polarized synthetic aperture radar (SAR) data were acquired. The ERS-1 SAR backscatter variations are the subject of this article.

50-6508

Wind-induced ice floe rotation and icequakes north of the Alaskan Beaufort Sea coast.

Kozo, T.L., Fett, R.W., Mire, C.T., Gardner, S.D., *Geophysical research letters,* June 15, 1996, 23(13), p.1617-1620, 20 refs.

Oceanography, Ice openings, Sea ice distribution, Ice floes, Drift, Orientation, Icequakes, Turbulent boundary layer, Air ice water interaction, Wind factors, Underwater acoustics, Seismic reflection, Beaufort Sea

50-6509

Airborne measurements of atmospheric methane over oil fields in western Siberia.

Tohjima, Y., Maksiutov, S., Machida, T., Inoue, G., *Geophysical research letters,* June 15, 1996, 23(13), p.1621-1624, 17 refs.

Climatology, Air pollution, Atmospheric boundary layer, Atmospheric composition, Natural gas, Hot oil lines, Leakage, Environmental tests, Sampling, Russia—Siberia

50-6510

Formation of polar stratospheric clouds on preactivated background aerosols.

Zhang, R.Y., Leu, M.T., Molina, M.J., *Geophysical research letters,* June 15, 1996, 23(13), p.1669-1672, 26 refs.

Climatology, Polar atmospheres, Atmospheric composition, Degradation, Ice vapor interface, Polar stratospheric clouds, Cloud physics, Supersaturation, Heterogeneous nucleation, Aerosols, Simulation

Results of laboratory simulations of the growth of nitric acid trihydrate, $HNO_3 \cdot 3H_2O$, on sulfuric acid tetrahydrate, $H_2SO_4 \cdot H_2O$, are presented. The observations reveal that under typical stratospheric conditions, uptake of HNO_3 on a $H_2SO_4 \cdot 4H_2O$ substrate results in a surface coverage of approximately one monolayer or less, and that initial nucleation requires a large supersaturation. In the stratosphere, polar stratospheric cloud particles may experience repeated cycles of evaporation and condensation of HNO_3 on preexisting background frozen sulfate aerosols. Hence, growth of $HNO_3 \cdot 3H_2O$ on preactivated aerosols provides one important mechanism for polar stratospheric cloud formation and denitrification. (Auth. mod.)

50-6511

Recent decreases in arctic summer ice cover and linkages to atmospheric circulation anomalies.

Maslanik, J.A., Serreze, M.C., Barry, R.G., *Geophysical research letters,* June 15, 1996, 23(13), p.1677-1680, 25 refs.

Climatology, Polar atmospheres, Marine atmospheres, Atmospheric boundary layer, Atmospheric circulation, Sea ice distribution, Ice air interface, Seasonal variations, Ice cover effect, Wind factors, Arctic Ocean

50-6512

Heterogeneous interactions of BrO and ClO; evidence for BrO surface recombination and reactions with HSO_3^-/SO_3^{2-}.

Abbatt, J.P.D., *Geophysical research letters,* June 15, 1996, 23(13), p.1681-1684, 17 refs.

Climatology, Polar atmospheres, Polar stratospheric clouds, Cloud physics, Heterogeneous nucleation, Aerosols, Ice vapor interface, Adsorption, Scavenging, Simulation

50-6513

Unsuitability of meteoritic and other nuclei for polar stratospheric cloud freezing.

Biermann, U.M., Presper, T., Koop, T., Mößinger, J., Crutzen, P.J., Peter, T., *Geophysical research letters,* June 15, 1996, 23(13), p.1693-1696, 26 refs.

Climatology, Polar atmospheres, Polar stratospheric clouds, Heterogeneous nucleation, Ice vapor interface, Ice formation, Ice nuclei, Hydrates, Aerosols, Simulation, Freezing rate

Bulk freezing experiments have been performed with binary and ternary $HNO_3/H_2SO_4/H_2O$ solutions containing original micrometeorites, ground samples of representative larger meteorites and other freezing nuclei of potential stratsopheric importance. The experiments help to determine upper bounds for the heterogeneous freezing rates of sulfuric and nitric acid hydrates. Based on an analysis of the meteoritic mass flux from space and of the modifications meteorites undergo when entering the atmosphere, the resulting morphology and surface area of extraterrestrial material in the stratosphere are estimated. Micrometeorites gained from Antarctica are thus shown to be a good proxy for meteoritic surfaces in the stratosphere. In combination with this analysis the freezing experiments suggest that heterogeneous nucleation rates on micrometeorites are too low to enhance freezing of polar stratospheric clouds above the frost point. (Auth. mod.)

50-6514

Spatial patterns of modern diatom distribution and multiple paleolimnological records from a small arctic lake on Baffin Island, Arctic Canada.

Wolfe, A.P., *Canadian journal of botany,* Mar. 1996, 74(3), p.435-449, With French summary. 64 refs.

Limnology, Ecosystems, Lacustrine deposits, Paleoecology, Plankton, Drill core analysis, Distribution, Stratigraphy, Sedimentation, Ice cover effect, Statistical analysis, Radioactive age determination, Canada—Northwest Territories—Baffin Island

50-6515

Ice-flow history and glacial dispersal patterns, southeastern Cape Breton Island, Nova Scotia: implications for mineral exploration.

McClenaghan, M.B., DiLabio, R.N.W., *Canadian journal of earth sciences,* Feb. 1996, 33(2), p.351-362, With French summary. 36 refs.

Glacial geology, Pleistocene, Glaciation, Glacier flow, Glacial deposits, Stratigraphy, Lithology, Striations, Landforms, Geochemistry, Exploration, Canada—Nova Scotia—Cape Breton Island

50-6516

Release and dispersal of Pb and Zn contaminated sediments within an arctic braided river system.

Sear, D., Carver, S., *Applied geochemistry,* Jan.-Mar. 1996, 11(1-2), International Symposium on Environmental Geochemistry, 3rd, Kraków, Poland, Sep. 12-16, 1994. Selected papers, p.187-195, 20 refs.

Tailings, River flow, Deltas, Water pollution, Bottom sediment, Metals, Dispersions, Sediment transport, Deltas, Geochemistry, Solubility, Bottom topography, Topographic effects, Environmental impact, Greenland—Tunnelelv River

50-6517

Properties and soil development of late-Pleistocene paleosols from Seward Peninsula, northwest Alaska.

Höfle, C., Ping, C.L., *Geoderma,* June 1996, 71(3-4), p.219-243, 51 refs.

Pleistocene, Geocryology, Subarctic landscapes, Soil formation, Subgrade soils, Diagenesis, Permafrost indicators, Sampling, Soil profiles, Chemical properties, Ice wedges, United States—Alaska—Seward Peninsula

50-6518

Soil geomorphology on bedrock and colluvial terrain with permafrost in central Alaska, USA.

Swanson, D.K., *Geoderma,* May 1996, 71(1-2), p.157-172, 27 refs.

Soil physics, Taiga, Subarctic landscapes, Geomorphology, Soil texture, Active layer, Physical properties, Microrelief, Topographic features, Discontinuous permafrost, Classifications, Sampling, United States—Alaska—Hughes

50-6519

Chlorophyll fluorescence as an indicator of frost hardiness in white spruce seedlings from different latitudes.

Binder, W.D., Fielder, P., *New forests,* May 1996, 11(3), p.233-253, 58 refs.

Trees (plants), Plant physiology, Cold tolerance, Cold stress, Freezing, Photosynthesis, Frost resistance, Chlorophylls, Luminescence, Damage, Statistical analysis

50-6520

Frost heaving of forest tree seedlings: a review.

Goulet, F., *New forestry,* Jan. 1995, 9(1), p.67-94, Refs. p.89-94.

Forestry, Soil science, Trees (plants), Growth, Damage, Forest soils, Frost heave, Frozen ground expansion, Frozen ground mechanics, Frost protection, Countermeasures

50-6521

Depositiom of atmospherically transported polychlorinated biphenyls in the Canadian Arctic.
Gregor, D., Teixeira, C., Rowsell, R., *Chemosphere,* July 1996, 33(2), p.227-244, 37 refs.
Precipitation (meteorology), Climatology, Air pollution, Subpolar regions, Aerosols, Snowfall, Snow impurities, Scavenging, Hydrocarbons, Sedimentation, Snow samplers, Sampling, Environmental tests, Seasonal variations, Canada—Northwest Territories—Mould Bay, Canada—Northwest Territories—Eureka

50-6522

Lichens collected on the arctic excursion of the 9th International Botanical Congress (Montreal) in 1959.
Thomson, J.W., Weber, W.A., *Bryologist,* 1992, 95(4), p.392-405, 23 refs.
Plants (botany), Lichens, Sampling, Distribution, Classifications, Arctic landscapes, Expeditions

50-6523

***Tetrodontium repandum* and *Seligeria diversifolia* discovered in Arctic Canada.**
Hedderson, T.A., Brassard. G.R., *Bryologist,* 1992, 95(4), p.443-444, 14 refs.
Plants (botany), Mosses, Arctic landscapes, Exploration, Classifications, Distribution, Canada—Northwest Territories—Ellesmere Island

50-6524

Seasonal variations in frost tolerance and sugar content of two *Plagiomnium* species.
Rütten, D., Santarius, K.A., *Bryologist,* 1993, 96(4), p.564-568, 32 refs.
Plants (botany), Mosses, Plant physiology, Cold tolerance, Frost resistance, Freeze thaw tests, Photosynthesis, Temperature effects, Seasonal variations, Cold weather tests

50-6525

Movement of the ice shelf at Maudheim.
Swithinbank, C., Norwegian-British-Swedish Antarctic Research Expedition, 1949-1952, Scientific results, Vol.III, C, Oslo, Norsk Polarinstitutt, 1958, p.79-95 + refs. and Plate I, 12 refs.
Ice deformation, Ice creep, Ice melting, Ice shelves, Expeditions, Antarctica—Norsel Iceport, Antarctica—Maudheim Station
Measurements of surface deformation near an ice front are described. The work is concerned with relative rather than with absolute movement. Measurements are made on 18 stakes spread over an area of 34 km^2 within 6 km of the ice front of Maudheim Ice Shelf. The relative position of each stake is fixed by plane triangulation from a 2 km base line. Two surveys some months apart establish the amount of deformation in the interval between. Computation involves the development of techniques allowing for movement of stakes during periods in which surveys are in progress. Reduced angles are used to locate points by graphical intersection. Deformation is neither radial nor parallel, but transitional. There is rapidly diverging flow near the ice front. Depressions are preserved by a continuous downward movement of their flooring with respect to their sides. The relationship between regime and movement figures shows that in equilibrium, two-thirds of the accumulation are dispersed by a continual increase of surface area, while one third is removed by melting from below. Further melting results in thinning of the ice sheet and a surface slope towards the ice front. The ice shelf shows no measurable response to short-period variations in the amount of accumulation. A rough calculation of the material balance of the Maudheim Ice Shelf drainage area gives an indication of the true rate of seaward movement of Maudheim. (Auth.)

50-6526

Landscape evolution in Antarctica.
Campbell, I.B., Claridge, G.G.C., *Earth-science reviews,* 1988, Vol.25, p.345-353, 13 refs.
Soil science, Landscape development, Wind erosion, Weathering, Permafrost, Patterned ground, Antarctica—Victoria Land, Antarctica—Wright Valley
The extreme aridity of Antarctica means that very little water is available for weathering and geomorphic processes. The landscape everywhere has been shaped by ice, but land exposed after ice retreat has been modified by cold desert weathering processes. Wind is the main agent for removal and redeposition of weathered material, while fluvial action is insignificant as an eroding or transporting agent. There are few suitable deposits that allow reliable or accurate dating of events but the dates that are available show that landform evolution has been taking place very slowly. Soil weathering studies have provided a useful means of extrapolation showing relative ages of surfaces where no dates are available. The major weathering processes in Antarctica involve patterned ground movement, frost action, wind, salt weathering, and soil weathering. These combine to form distinctive landscape features. The complex nature of landform development is illustrated by considering events that have taken place within Wright Valley, one of the largest ice-free areas in Antarctica. Within this valley are land surfaces ranging from those found on Late Pleistocene up-valley tills, to high altitude extremely fretted and weathered land surfaces that have been ice-free possibly since the Early Miocene. (Auth.)

50-6527

Study of H_2O contamination on a cooled optical surface.
Guo, Q., Pei, Y.T., Lan, Z.G., *Chinese journal of infrared and millimeter waves,* 1995, 14(2), p.149-156, 9 refs.
Remote sensing, Spacecraft, Radiometry, Infrared radiation, Optical properties, Water vapor, Water films, Ice formation, Radiation absorption, Transmissivity, Ice optics, Ice cover effect, Simulation

50-6528

Bank of arctic seismological data.
Avetisov, G.P., Vinnik, A.A., *Izvestiya. Physics of the solid earth,* Oct. 1995, 31(3), p.262-267, Translated from Fizika zemli. 16 refs.
Geology, Geophysical surveys, Seismic surveys, Earthquakes, Data processing, Computer applications, Computer programs

50-6529

SO_2 distributions on Io.
Sartoretti, P., Belton, M.J.S., McGrath, M.A., *Icarus,* Aug. 1996, 122(2), p.273-287, 45 refs.
Extraterrestrial ice, Satellites (natural), Imaging, Ultraviolet radiation, Regolith, Frost, Surface properties, Ice vapor interface, Absorption, Albedo, Ultraviolet radiation, Spectra, Models

50-6530

Light flash and ionization from hypervelocity impacts on ice.
Burchell, M.J., Cole, M.J., Ratcliff, P.R., *Icarus,* Aug. 1996, 122(2), p.359-365, 17 refs.
Extraterrestrial ice, Satellites (natural), Ground ice, Ice erosion, Simulation, Impact tests, Ice solid interface, Ice mechanics, Ionization, Light effects

50-6531

Electron-beam-induced amorphization of ice III or IX obtained by high-pressure freezing.
Sartori, N., Bednar, J., Dubochet, J., *Journal of microscopy,* June 1996, 182(pt.3), p.163-168, 32 refs.
Ice physics, Cryogenics, Cryobiology, Scanning electron microscopy, Ice microstructure, Phase transformations, Vitreous ice, High pressure ice, Amorphous ice, Radiation absorption, High pressure tests, Photochemical reactions, Scanning electron microscopy

50-6532

Facies architecture and grounding-line fan processes of morainal banks during the deglaciation of coastal Maine.
Hunter, L.E., Powell, R.D., Smith, G.W., MP 3885, *Geological Society of America. Bulletin,* Aug. 1996, 108(8), p.1022-1038, Refs. p.1037-1038.
Pleistocene, Marine geology, Glacial geology, Glacial deposits, Ocean currents, Turbulent diffusion, Sediment transport, Moraines, Stratigraphy, Glacier melting, Grounded ice, United States—Maine
Submarine jet processes are inferred from glaciomarine facies exposed in gravel pits in southwestern coastal Maine. The geometry and distribution of fan facies depend on (1) the proximity to the grounding line and stream effluxes, (2) the angle of jet trajectory from glacier conduits, and (3) sediment remobilization processes. Syndepositional glaciotectonic deformation further augments morainal bank formation through pushing and squeezing of fan sediments at the grounding line. Complex process-sediment interactions along the temperate tidewater margin of the Laurentide ice sheet are recorded in the facies architecture of sedimentary sequences in morainal banks. Morainal bank accumulation was governed by rapid fluvial deposition and by outwash jet dynamics that controlled the spatial distribution of sedimentary facies. Near the grounding line, meltwater dynamics change rapidly where sediment-laden fresh water is discharged at or near the sea floor. Jet trajectory relative to the morainal-bank slope determines whether a jet will make contact with the morainal bank. Below these buoyant jets, backflow eddies can produce currents that drive ripple migration toward the grounding line. Abrupt facies changes record fluctuations in jet discharge and trajectory and sediment redistribution by sediment gravity flows initiated near the grounding line.

50-6533

Late Wisconsinan ice retreat from the Scotian Shelf.
King, L.H., *Geological Society of America. Bulletin,* Aug. 1996, 108(8), p.1056-1067, 58 refs.
Pleistocene, Marine geology, Glacial geology, Ice sheets, Glacier melting, Glacial deposits, Quaternary deposits, Moraines, Stratigraphy, Seismic reflection, Profiles, Canada—Nova Scotia

50-6534

Palaeoenvironments in the Skagerrak-Kattegat basin in the eastern North Sea during the last deglaciation.
Knudsen, K.L., Conradsen, K., Heier-Nielsen, S., Seidenkrantz, M.S., *Boreas,* June 1996, 25(2), p.65-77, 61 refs.
Marine geology, Oceanography, Ocean currents, Pleistocene, Paleoclimatology, Paleoecology, Marine deposits, Sampling, Sedimentation, Radioactive age determination, Geochronology, Sedimentation, North Sea

50-6535

Last deglaciation of the Franz Victoria Trough, northern Barents Sea.
Lubinski, D.J., et al, *Boreas,* June 1996, 25(2), p.89-100, 49 refs.
Pleistocene, Oceanography, Marine geology, Marine deposits, Glacial deposits, Glacier oscillation, Ice edge, Grounded ice, Lithology, Stratigraphy, Radioactive age determination, Drill core analysis, Seismic surveys, Barents Sea

50-6536

Deforming bed conditions on the Dänischer Wohld Peninsula, northern Germany.
Hart, J.K., Gane, F., Watts, R.J., *Boreas,* June 1996, 25(2), p.101-113, 35 refs.
Pleistocene, Glacial geology, Glacier beds, Ice solid interface, Glacial deposits, Lacustrine deposits, Sedimentation, Subglacial observations, Tectonics, Deformation, Substrates, Germany

50-6537

Comparison of mineral magnetic, geochemical and mineralogical techniques for compositional studies of glacial diamictons.
Walden, J., Smith, J.P., Dackombe, R.V., *Boreas,* June 1996, 25(2), p.115-130, 76 refs.
Glacial geology, Quaternary deposits, Glacial deposits, Geochemistry, Magnetic properties, Sampling, X ray diffraction, Spectroscopy, Remanent magnetism, Laboratory techniques

50-6538

Major palaeohydrographic changes in alpine foreland during the Pliocene-Pleistocene.
Petit, C., Campy, M., Chaline, J., Bonvalot, J., *Boreas,* June 1996, 25(2), p.131-143, 45 refs.
Pleistocene, Alpine landscapes, Geologic processes, Subsidence, Hydrography, River flow, Surface drainage, Sedimentation, Lithology, Stratigraphy, Geochronology, Boreholes

50-6539

Numerical reconstruction of a soft-bedded Laurentide Ice Sheet during the last glacial maximum.
Clark, P.U., Licciardi, J.M., MacAyeal, D.R., Jenson, J.W., *Geology,* Aug. 1996, 24(8), p.679-682, 30 refs.
Pleistocene, Glaciation, Ice sheets, Glacial geology, Glacier beds, Deformation, Ice solid interface, Ice mechanics, Glacier mass balance, Simulation, Mathematical models, Topographic features

50-6540

Sliding rocks at the Racetrack, Death Valley: what makes them move?: comment and reply.
Sharp, R.P., Carey, D.L., Reid, J.B., Jr., Polissar, P.J., Williams, M.L., *Geology,* Aug. 1996, 24(8), p.766-767, 10 refs. For pertinent paper see 50-1106.
Rocks, Ice sheets, Sliding, Wind factors, Ice solid interface, Ice friction, Sediment transport

50-6541

***Nilssoniocladus* in the Cretaceous Arctic: new species and biological insights.**

Spicer, R.A., Herman, A.B., *Review of palaeobotany and palynology,* May 1996, 92(3-4), p.229-243, 29 refs.

Paleoecology, Paleobotany, Plant ecology, Vegetation patterns, Sediments, Fossils, Plant tissues, Structural analysis, Classifications, United States—Alaska—Colville River

50-6542

In-situ observations of an antarctic polar stratospheric cloud: similarities with arctic observations.

Dye, J.E., et al, *Geophysical research letters,* July 15, 1996, 23(15), p.1913-1916, 15 refs.

Polar atmospheres, Cloud physics, Polar stratospheric clouds, Aerosols, Heterogeneous nucleation, Freezing points, Ice vapor interface, Aerial surveys, Spectroscopy, Cloud droplets, Temperature effects

Measured particle volumes in a type I polar stratospheric cloud near the antarctic polar vortex show that the onset of the cloud occurred near 193 K, or 3° colder than nitric acid trihydrate saturation. The onset temperature, the smooth increase of volume with decreasing temperature, the inverse correlation of particle volume and enhanced NO_y (HNO_3 in the particles) with temperature, and comparisons of observations with an equilibrium model of ternary droplet growth, all support the notion that much of this type I PSC was ternary solution droplets. This provides confirmation of previous findings in the Northern Hemisphere. However, the ternary model does not fit the observations in all regions. This may be due to the presence of some solid phase growth in agreement with impactor observations. (Auth. mod.)

50-6543

Unexpectedly low ozone concentrations in midlatitude tropospheric ice clouds: a case study.

Reichardt, J., Ansmann, A., Serwazi, M., Weitkamp, C., Michaelis, W., *Geophysical research letters,* July 15, 1996, 23(15), p.1929-1932, 14 refs.

Climatology, Clouds (meteorology), Cloud physics, Atmospheric composition, Aerosols, Lidar, Ice crystal optics, Ozone, Heterogeneous nucleation

50-6544

Aircraft-generated aerosols and visible contrails.

Kärcher, B., *Geophysical research letters,* July 15, 1996, 23(15), p.1933-1936, 15 refs.

Cloud physics, Atmospheric composition, Condensation trails, Aerosols, Gases, Ice formation, Heterogeneous nucleation, Ice vapor interface, Models, Weather modification

50-6545

Characteristics of Arctic Ocean climate based on COADS data, 1980-1993.

Clark, M.P., Serreze, M.C., Barry, R.G., *Geophysical research letters,* July 15, 1996, 23(15), p.1953-1956, 23 refs.

Climatology, Marine meteorology, Marine atmospheres, Cloud cover, Precipitation (meteorology), Seasonal variations, Meteorological data, Ice cover effect, Air ice water interaction, Arctic Ocean

50-6546

Greenland's ice holds key to climate puzzle.

Kiernan, V., *New scientist,* July 6, 1996, 151(2037), p.7.

Paleoclimatology, Climatic changes, Ice sheets, Ice cores, Ice dating, Isotope analysis, Drill core analysis, Greenland

50-6547

Kulshan caldera: a Quaternary subglacial caldera in the North Cascades, Washington.

Hildreth, W., *Geological Society of America. Bulletin,* July 1996, 108(7), p.786-793, 42 refs.

Geomorphology, Pleistocene, Glacial geology, Glacial erosion, Volcanic ash, Magma, Fallout, Quaternary deposits, Topographic features, United States—Washington—North Cascade Mountains

50-6548

Contribution of river flow and atmospheric transport to pollution of Russian northern seas.

Rovinskiĭ, F.IA., Chernogaeva, G.M., Paramonov, S.G., *Russian meteorology and hydrology,* 1995, No.9, p.12-18, Translated from Meteorologiia i gidrologiia. 12 refs.

Oceanography, Estuaries, Water pollution, Air pollution, River flow, Runoff, Aerosols, Sedimentation, Environmental impact, Arctic Ocean

50-6549

Atlantic water in the arctic basin. 2. Circulation.

Dmitriev, N.E., Poliakov, I.V., *Russian meteorology and hydrology,* 1995, No.9, p.55-61, Translated from Meteorologiia i gidrologiia. 14 refs.

Oceanography, Ocean currents, Flow measurement, Velocity measurement, Hydrography, Seasonal variations, Arctic Ocean

50-6550

Mycorrhizal diversity in arctic and alpine tundra: an open question.

Gardes, M., Dahlberg, A., *New phytologist,* May 1996, 133(1), p.147-157, Refs. p.155-157.

Tundra vegetation, Alpine tundra, Plant ecology, Fungi, Classifications, Distribution, Vegetation patterns, Cold weather survival

50-6551

Depositional setting, sequence stratigraphy, diagenesis, and reservoir potential of a mixed-lithology, upwelling deposit: Upper Triassic Shublik Formation, Prudhoe Bay, Alaska.

Kupecz, J.A., *AAPG bulletin,* Sep. 1995, 79(9), p.1301-1319, Refs. p.317-319.

Hydrocarbons, Marine geology, Reservoirs, Geologic structures, Stratigraphy, Lithology, Porosity, Permeability, Diagenesis, United States—Alaska—Prudhoe Bay

50-6552

Glaciers and climate of the mountains of the former USSR during the Neoglacial.

Serebriannyĭ, L.R., Solomina, O.N., *Mountain research and development,* May 1996, 16(2), p.157-166, With French and German summaries. 75 refs.

Paleoclimatology, Mountain glaciers, Glacier oscillation, Ice volume, Moraines, Climatic changes, Geochronology, Radioactive age determination, Russia—Ural Mountains

50-6553

Late Quaternary sea level history in the Paulatuk to Bathurst Inlet area, Northwest Territories.

Kerr, D.E., *Canadian journal of earth sciences,* Mar. 1996, 33(3), p.389-403, With French summary. 68 refs.

Pleistocene, Glacial geology, Geomorphology, Quaternary deposits, Sea level, Deltas, Shoreline modification, Stratigraphy, Arctic landscapes, Glaciation, Ice loads, Isostasy, Radioactive age determination, Canada—Northwest Territories—Paulatuk

50-6554

Freezing characteristics of rigid plant tissues—development of cell tension during extracellular freezing.

Rajashekar, C.B., Burke, M.J., *Plant physiology,* June 1996, 111(2), p.597-603, 30 refs.

Plant physiology, Plant tissues, Cold stress, Structural analysis, Supercooling, Freezing points, Homogeneous nucleation, Ice formation, Unfrozen water content, Cold weather survival

50-6555

Cell-wall changes and cell tension in response to cold acclimation and exogenous abscisic acid in leaves and cell cultures.

Rajashekar, C.B., Lafta, A., *Plant physiology,* June 1996, 111(2), p.605-612, 43 refs.

Plant physiology, Acclimatization, Plant tissues, Structural analysis, Deformation, Low temperature tests, Freezing, Unfrozen water content, Water pressure, Cavitation

50-6556

Final stages in the collapse of the Laurentide ice sheet, Hudson Strait, Canada, NWT: ^{14}C AMS dates, seismic stratigraphy, and magnetic susceptibility logs.

Andrews, J.T., Maclean, B., Kerwin, M., Manley, W., Jennings, A.E., Hall, F., *Quaternary science reviews,* Dec. 1995, 14(10), p.983-1004, 69 refs.

Pleistocene, Ice sheets, Glacier oscillation, Glacial geology, Quaternary deposits, Marine deposits, Sedimentation, Drill core analysis, Stratigraphy, Seismic surveys, Radioactive age determination, Geochronology, Canada—Northwest Territories—Hudson Strait

50-6557

Plant functional types as predictors of transient responses of arctic vegetation to global change.

Chapin, F.S., III, Bret-Harte, M.S., Hobbie, S.E., Zhong, H.L., *Journal of vegetation science,* June 1996, 7(3), p.347-358, Refs. p.355-358.

Climatology, Climatic changes, Global change, Ecosystems, Biomass, Plant ecology, Migration, Vegetation patterns, Forest lines, Tundra vegetation, Classifications, Forecasting, Statistical analysis, Environmental impact

50-6558

Use of mass- and area-dimensional power laws for determining precipitation particle terminal velocities.

Mitchell, D.L., *Journal of the atmospheric sciences,* June 15, 1996, 53(12), p.1710-1723, 50 refs.

Precipitation (meteorology), Ice physics, Particles, Snow pellets, Hail, Ice crystal size, Ice crystal structure, Classifications, Velocity measurement, Forecasting, Viscous flow, Analysis (mathematics), Statistical analysis

50-6559

Englacial and proglacial glaciotectonic processes at the snout of a thermally complex glacier in Svalbard.

Hambrey, M.J., Huddart, D., *Journal of quaternary science,* Dec. 1995, 10(4), p.313-326, 51 refs.

Glacial geology, Geomorphology, Landforms, Moraines, Tectonics, Glacier tongues, Ice push, Glacier beds, Quaternary deposits, Norway—Svalbard

50-6560

Late Weichselian to early Holocene litho- and biostratigraphy in the Devil's Hole area, central North Sea, and its relation to glacial isostasy.

Ekman, S.R.R., *Journal of quaternary science,* Dec. 1995, 10(4), p.343-352, 67 refs.

Oceanography, Pleistocene, Glacier oscillation, Marine geology, Quaternary deposits, Marine deposits, Pleistocene, Glacial geology, Isostasy, Sea level, Marine deposits, Stratigraphy, Paleoecology, Radioactive age determination, North Sea

50-6561

On the sensitivity of Holocene talus-derived rock glaciers to climate change in the Ben Ohau Range, New Zealand.

Kirkbride, M., Brazier, V., *Journal of quaternary science,* Dec. 1995, 10(4), p.353-365, 65 refs.

Periglacial processes, Geologic processes, Rock glaciers, Alpine landscapes, Slope processes, Talus, Rock mechanics, Climatic changes, Geomorphology, Weathering, New Zealand

50-6562

Mineral magnetic analysis of a 'weathering' surface within glacigenic sediments at Ganllynnau, North Wales.

Walden, J., Addison, K., *Journal of quaternary science,* Dec. 1995, 10(4), p.367-378, 47 refs.

Quaternary deposits, Glacial geology, Glacial deposits, Lithology, Weathering, Geochronology, Surface properties, Minerals, Remanent magnetism, Magnetic properties, Stratigraphy, Particle size distribution, Statistical analysis, United Kingdom—Wales

50-6563

Rapid late-glacial atmospheric CO_2 changes reconstructed from the stomatal density record of fossil leaves.

Beerling, D.J., Birks, H.H., Woodward, F.I., *Journal of quaternary science,* Dec. 1995, 10(4), p.379-384, 47 refs.

Paleoclimatology, Climatic changes, Global change, Atmospheric composition, Carbon dioxide, Paleoecology, Quaternary deposits, Lacustrine deposits, Sediments, Radioactive age determination, Drill core analysis, Correlation

50-6564

Last interglacial and Holocene climatic development in the Norwegian Sea region: ocean front movements and ice-core data.

Sejrup, H.P., Haflidason, H., Kristensen, D.K., Johnsen, S.J., *Journal of quaternary science,* Dec. 1995, 10(4), p.385-390, 32 refs.

Paleoclimatology, Oceanography, Quaternary deposits, Marine deposits, Ocean currents, Climatic changes, Ice cores, Drill core analysis, Paleoecology, Plankton, Radioactive age determination, Isotope analysis, Norwegian Sea

50-6565

Regional differences in the Lateglacial climate of northern Europe based on coleopteran analysis.

Coope, G.R., Lemdahl, G., *Journal of quaternary science,* Dec. 1995, 10(4), p.391-395, 35 refs.

Paleoclimatology, Quaternary deposits, Climatic changes, Climatic factors, Paleoecology, Air temperature, Temperature variations, Ocean currents, Ice cover effect

50-6566

Vertical particle flux on the shelf off northern Spitsbergen, Norway.

Andreassen, I., Nöthig, E.M., Wassmann, P., *Marine ecology progress series,* June 27, 1996, 137(1-3), p.215-228, 54 refs.

Oceanography, Marine biology, Ecology, Suspended sediments, Dispersions, Plankton, Biomass, Ice edge, Ice melting, Ice cover effect, Sampling, Norway—Spitsbergen

50-6567

Impact of iceberg scouring on polar benthic habitats.

Gutt, J., Starmans, A., Dieckmann, G., *Marine ecology progress series,* June 27, 1996, 137(1-3), p.311-316, 12 refs.

Oceanography, Marine biology, Biomass, Ecology, Ocean bottom, Icebergs, Ice scoring, Grounded ice, Environmental impact

In situ photographs and videos demonstrate that iceberg grounding in both polar regions causes considerable damage to benthic communities. Sessile organisms are eradicated and pioneer species begin to grow in high abundances on the devastated substratum. A preliminary quantitative analysis shows that the sea floor in the Antarctic and Arctic areas of investigation is disturbed by icebergs statistically once every 230 and 53 yr, respectively. Due to the extreme slow growth of many species, particularly in Antarctica, areas frequently disturbed in this manner are likely to be characterized by a continuous natural fluctuation between destruction and recovery. Increased perturbation by iceberg groundings through predicted global warming will result in considerable impairment of this environment. (Auth.)

50-6568

Surface temperature from ERS-1 ATSR infrared thermal satellite data in polar regions.

Stroeve, J., Haefliger, M., Steffen, K., *Journal of applied meteorology,* Aug. 1996, 35(8), p.1231-1239, 15 refs.

Climatology, Atmospheric boundary layer, Ice sheets, Surface temperature, Snow surface temperature, Radiometry, Infrared reconnaissance, Spacecraft, Radiance, Statistical analysis, Snow cover effect, Models

50-6569

Radiative properties of cirrus clouds derived from surface interferometric measurements.

Beck, G.H., Davis, J.M., Cox, S.K., *Journal of applied meteorology,* Aug. 1996, 35(8), p.1240-1248, 12 refs.

Clouds (meteorology), Cloud physics, Optical properties, Radiance, Upwelling, Ice crystal optics, Radiometry, Particle size distribution, Light scattering, Attenuation, Infrared radiation

50-6570

New formulation for the Bowen ratio over saturated surfaces.

Andreas, E.L., Cash, B.A., MP 3886, *Journal of applied meteorology,* Aug. 1996, 35(8), p.1279-1289, 34 refs.

Climatology, Atmospheric boundary layer, Surface temperature, Forecasting, Heat flux, Latent heat, Turbulent flow, Air ice water interaction, Snow cover effect, Indexes (ratios), Analysis (mathematics)

Analytical expressions are presented for calculating the Bowen ratio, $Bo=H_s/H_L$, from a quantity that is derived primarily from the surface temperature T_s and the assumption that the near-surface air is saturated (but not supersaturated) with water vapor. Here H_s is the surface sensible heat flux and H_L is the surface latent heat flux. These analytical expressions taken from the literature came from experiments over snow-covered and sea ice and over water in the Great Lakes, the marginal seas, and the open ocean at a variety of latitudes including Antarctica. This analysis suggests that the analytical expressions should generally predict Bo to better than ±40%. It is concluded that predicting Bo from surface temperature alone yields good results for large-scale or longer time (e.g., daily) averages but is less accurate when both the spatial and temporal averaging are limited. Consequently, the results will probably find most use in global climate models, in coupled ice-ocean-atmosphere models, and for data assimilation and quality control. (Auth. mod.)

50-6571

Automated nowcasting model of road surface temperature and state for winter road maintenance.

Shao, J., Lister, P.J., *Journal of applied meteorology,* Aug. 1996, 35(8), p.1352-1361, 21 refs.

Roads, Winter maintenance, Surface temperature, Temperature measurement, Frost forecasting, Ice detection, Mathematical models, Heat transfer, Sensors, Accuracy

50-6572

Recent trends in maximum and minimum temperature threshold exceedences in the northeastern United States.

DeGaetano, A.T., *Journal of climate,* July 1996, 9(7), p.1646-1660, 15 refs.

Climatology, Air temperature, Temperature variations, Seasonal variations, Statistical analysis, Meteorological data, Records (extremes), United States

50-6573

Further discussion on simulation of the modern arctic climate by the NCAR CCM1.

Williamson, D.L., Bromwich, D.H., Tzeng, R.Y., *Journal of climate,* July 1996, 9(7), p.1669-1672, 4 refs.

Climatology, Polar atmospheres, Water vapor, Advection, Moisture transfer, Simulation, Mathematical models, Accuracy, Sampling

50-6574

Spitsbergen—Resources and economic development in a High Arctic island group. [Spitzbergen—Ressourcen und Erschließung einer hocharktischen Inselgruppe]

Thannheiser, D., *Geographische Rundschau,* May 1996, 48(5), p.268-274, In German with English summary. 11 refs.

Ecosystems, Arctic landscapes, Economic development, Norway—Spitsbergen

50-6575

Multilaterals, horizontal wells could access remote Russian oil reserves.

Hazen, T., *Offshore,* Aug. 1996, 56(8), p.114.

Petroleum industry, Oil recovery, Hydrocarbons, Cost analysis, Economic analysis, Continuous permafrost, Exploration, International cooperation, Russia—Pechora Sea

50-6576

Palaeomagnetic constraints on the ages of glacial deposits in north-western South Island, New Zealand.

Fitzsimons, S.J., Pollington, M., Colhoun, E., *Zeitschrift für Geomorphologie. Supplementband,* July 1996, Suppl.105, p.7-20, 34 refs.

Glacial geology, Glaciation, Glacial deposits, Lacustrine deposits, Landforms, Stratigraphy, Pleistocene, Geomagnetism, Remanent magnetism, Polarization (charge separation), Magnetic properties, Age determination, New Zealand—South Island

50-6577

Landform and sediment associations of dry-based glaciers in arid polar environments.

Humphreys, K.A., Fitzsimons, S.J., *Zeitschrift für Geomorphologie. Supplementband,* July 1996, Suppl.105, p.21-33, 24 refs.

Glacial geology, Geomorphology, Landforms, Glacial deposits, Sedimentation, Stratigraphy, Ice composition, Substrates, Deformation, Ice solid interface, Antarctica—Victoria Land

The principal objective of this study is to examine whether a distinct lithofacies association is produced by small, dry-based glaciers of the Dry Valleys area of southern Victoria Land. Glaciotectonic and sedimentary structures in basal ice, entrained sediment blocks and ice marginal deposits were carefully examined. There is little evidence of the preservation of englacial structures in tills or the highly attenuated tectonic till facies identified by previous workers. The dominant processes involved in the production of ice marginal landforms and sediments in this arid polar environment are entrainment of deformable substrate and the formation of thrust block moraines. The results suggest that the sediment association produced by polar glaciers in an arid environment is distinct from the sediment association produced by temperate glaciers but is similar to that produced by subpolar (polythermal) glaciers. (Auth. mod.)

50-6578

Physical limnological processes under ice.

Kenney, B.C., *Hydrobiologia,* Apr. 12, 1996, 322(1-3), International Lake Ladoga Symposium, 1st, St. Petersburg, Russian, Nov. 22-26, 1993. Proceedings. Ecological problems of Lake Ladoga, p.85-90, 8 refs.

Limnology, Icebound lakes, Lake ice, Water temperature, Profiles, Heat flux, Subglacial observations, Ice cover effect, Insulation, Ice water interface, Water transport

50-6579

Mixing in ice-covered lakes.

Bengtsson, L., *Hydrobiologia,* Apr. 12, 1996, 322(1-3), International Lake Ladoga Symposium, 1st, St. Petersburg, Russian, Nov. 22-26, 1993. Proceedings. Ecological problems of Lake Ladoga, p.91-97, 21 refs.

Limnology, Icebound lakes, Ice cover effect, Oscillations, Ice water interface, Turbulent diffusion, Water transport, Water temperature, Temperature distribution, Heat flux, Convection

50-6580

Ecological aspects of the development of flat-polygonal bogs of Yamal.

Kanev, V.V., Alekseeva, R.N., *Russian journal of ecology,* July-Aug. 1996, 27(4), p.251-255, Translated from Ekologiia. 14 refs.

Tundra terrain, Tundra soils, Tundra vegetation, Swamps, Peat, Chemical composition, Stratigraphy, Ground ice, Patterned ground, Organic soils, Ecology, Russia—Yamal Peninsula

50-6581

Assessment of the influence of gas condensate on hydrobionts of the Barents Sea under experimental conditions.

Gorbacheva, E.A., Laptev, A.M., *Russian journal of ecology,* July-Aug. 1996, 27(4), p.284-286, Translated from Ekologiia. 12 refs.

Oceanography, Water pollution, Natural gas, Hydrocarbons, Marine biology, Ecosystems, Biomass, Environmental impact, Environmental tests, Simulation, Barents Sea

50-6582

Freezing and thawing of the eastern arctic shelf in the Late Pleistocene (a computer experiment).

Sigunov, IU.A, Fartyshev, A.I., *Russian geology and geophysics,* 1995, 36(9), p.37-43, Translated from Geologiia i geofisika. 15 refs.

Pleistocene, Paleoclimatology, Marine geology, Geocryology, Ocean bottom, Freeze thaw cycles, Computerized simulation, Sea level, Mathematical models, Frozen rocks, Subsea permafrost, Arctic Ocean

50-6583

Climate of western Siberia: past and future.

Bukreeva, G.F., Arkhipov, S.A., Volkova, V.S., Orlova, L.A., *Russian geology and geophysics,* 1995, 36(11), p.1-21, Translated from Geologiia i geofizika. 22 refs.

Paleoclimatology, Climatic changes, Mathematical models, Statistical analysis, Tundra climate, Tundra vegetation, Taiga, Palynology, Spectra, Long range forecasting, Meteorological factors, Russia—Siberia

50-6584

Climate in the optimum of the Late-Quaternary (Kazantsevo) interglacial in the western Siberia and prediction of climate in the near future.

Volkova, V.S., Bakhareva, V.A., *Russian geology and geophysics,* 1995, 36(11), p.22-34, Translated from Geologiia i geofizika. 19 refs.

Paleoclimatology, Climatic changes, Quaternary deposits, Palynology, Paleoecology, Air temperature, Isotherms, Statistical analysis, Long range forecasting, Correlation, Russia—Siberia

50-6585

Influence of the depth hoar layer of the seasonal snow cover on the ground thermal regime.

Zhang, T., Osterkamp, T.E., Stamnes, K., *Water resources research,* July 1996, 32(7), p.2075-2086, 25 refs.

Snow cover structure, Snow depth, Depth hoar, Insulation, Phase transformations, Permafrost heat balance, Frozen ground temperature, Active layer, Snow cover effect, Thermal regime, Mathematical models, Seasonal variations

50-6586

Application of a generalized TOPMODEL to the small Ringelbach catchment, Vosges, France.

Ambroise, B., Freer, J., Beven, K., *Water resources research,* July 1996, 32(7), p.2147-2159, 35 refs.

River basins, Water balance, Hydrologic cycle, Snow hydrology, Snowmelt, Surface drainage, Ground water, Flow measurement, Statistical analysis, Mathematical models, France—Vosges

50-6587

Comments on "A method for rescaling humidity sensors at temperatures well below freezing".

Makkonen, L., Anderson, P.S., *Journal of atmospheric and oceanic technology,* Aug. 1996, 13(4), p.911-914, 4 refs. Includes reply. For pertinent paper see 49-809.

Meteorological instruments, Hygrometers, Sensors, Temperature effects, Freezing points, Cold weather performance, Ice cover effect, Ice sublimation, Supersaturation, Accuracy

50-6588

Mass wasting and ground collapse in terrains of volatile-rich deposits as a solar system-wide geological process: the Pre-Galileo view.

Moore, J.M., Mellon, M.T., Zent, A.P., *Icarus,* July 1996, 122(1), p.63-78, 59 refs.

Extraterrestrial ice, Satellites (natural), Ground ice, Regolith, Erosion, Degradation, Ice sublimation, Mass transfer, Geomorphology, Landforms, Geologic processes

50-6589

Vitrification of articular cartilage by high-pressure freezing.

Studer, D., Michel, M., Wohlwend, M., Hunziker, E.B., Buschmann, M.D., *Journal of microscopy,* Sep. 1995, 179(pt.3), p.321-332, 44 refs.

Cryobiology, Laboratory techniques, Biomass, Hydrates, Preserving, Cryogenics, Freezing, Cooling rate, High pressure ice, Phase transformations, Vitreous ice, Replicas, Scanning electron microscopy

50-6590

X-ray microanalysis of ion distribution in frozen salt/dextran droplets after freeze-substitution and embedding in anhydrous conditions.

Orlovich, D.A., Ashford, A.E., *Journal of microscopy,* Nov. 1995, 180(pt.2), p.117-126, 36 refs.

Cryobiology, X ray analysis, Microanalysis, Drops (liquids), Frozen liquids, Solutions, Ion density (concentration), Drops (liquids), Scanning electron microscopy, Replicas, Ice microstructure, Laboratory techniques

50-6591

Reports by the visiting two American scientists and others on US/Japan snow avalanche joint research projects conducted in 1992 and 1993.

Nagaoka Institute of Snow and Ice Studies, *Japan. National Research Institute for Earth Science and Disaster Prevention. Technical note,* Oct 1995, No.167, 47p., In Japanese and English. Refs. passim.

Research projects, International cooperation, Avalanche engineering, Avalanche forecasting, Japan, United States

50-6592

First interim report on the Arctic River Database for the Arctic Climate System Study (ACSYS).

Global Runoff Data Centre (GRDC), Koblenz, Germany, *Germany. Federal Institute of Hydrology (Bundesanstalt für Gewässerkunde). Report,* July 1995, No.8, 34p., 3 refs.

Research projects, Data processing, Stream flow, Runoff forecasting

50-6593

Report on the Mount Xixia Bangma region scientific expedition, 1964. [Xixiabangma feng diqu kexue kaocha baogao], Beijing, Kexue chubanshe (Science Press), 1982, 476p. + plates, In Chinese with English table of contents p.459-460. Refs. passim. For selected papers see 50-6594 through 50-6611.

DLC QE294.H68 1982 Orien China

Geological surveys, Alpine glaciation, Mountain glaciers, Glacier surveys, Glacial geology, Glacial deposits, Moraines, Quaternary deposits, Paleoclimatology, China—Xizang, Himalaya Mountains

50-6594

Surveying work in Mount Xixia Bangma region.

Zhou, J.Q., Yu, J.L., Mi, D.S., Xixiabangma feng diqu kexue kaocha baogao (Report on the Mount Xixia Bangma region scientific expedition), Beijing, Kexue chubanshe (Science Press), 1982, p.16-20, In Chinese.

DLC QE294.H68 1982 Orien China

Surveying, Geodetic surveys, Topographic surveys, Mapping, Height finding, Leveling, China—Xizang, Himalaya Mountains

50-6595

Distribution and morphological types of recent glaciers in Mount Xixia Bangma region.

Shi, Y.F., Ji, Z.X., Xixiabangma feng diqu kexue kaocha baogao (Report on the Mount Xixia Bangma region scientific expedition), Beijing, Kexue chubanshe (Science Press), 1982, p.24-39, In Chinese. 4 refs.

DLC QE294.H68 1982 Orien China

Mountain glaciers, Glacier surveys, Moraines, Snow line, Topographic surveys, China—Xizang, Himalaya Mountains

50-6596

Evolution conditions of recent glacier in Mount Xixia Bangma region.

Xie, Z.C., Qian, Z.J., Xixiabangma feng diqu kexue kaocha baogao (Report on the Mount Xixia Bangma region scientific expedition), Beijing, Kexue chubanshe (Science Press), 1982, p.40-44, In Chinese. 7 refs.

DLC QE294.H68 1982 Orien China

Mountain glaciers, Glacier surveys, Glacial meteorology, Glacier formation, Glacier alimentation, Snow ice interface, China—Xizang, Himalaya Mountains

50-6597

Snow cover and ice formation on the northern slope of Mount Xixia Bangma.

Xie, Z.C., Xixiabangma feng diqu kexue kaocha baogao (Report on the Mount Xixia Bangma region scientific expedition), Beijing, Kexue chubanshe (Science Press), 1982, p.45-59, In Chinese. 13 refs.

DLC QE294.H68 1982 Orien China

Mountain glaciers, Glacier surveys, Glacial meteorology, Glacier alimentation, Glacier oscillation, Glacier thickness, Snow line, Snow ice interface, Firn stratification, China—Xizang, Himalaya Mountains

50-6598

Temperature conditions of the glaciers on the northern slope of Mount Xixia Bangma.

Huang, M.H., Xixiabangma feng diqu kexue kaocha baogao (Report on the Mount Xixia Bangma region scientific expedition), Beijing, Kexue chubanshe (Science Press), 1982, p.60-66, In Chinese. 5 refs.

DLC QE294.H68 1982 Orien China

Mountain glaciers, Glacier surveys, Glacier heat balance, Glacier ice, Ice temperature, China—Xizang, Himalaya Mountains

50-6599

Features of ice texture in glacier ice and river ice on the northern slope of Mount Xixia Bangma.

Huang, M.H., Xixiabangma feng diqu kexue kaocha baogao (Report on the Mount Xixia Bangma region scientific expedition), Beijing, Kexue chubanshe (Science Press), 1982, p.67-73, In Chinese. 6 refs.

DLC QE294.H68 1982 Orien China

Glacier ice, River ice, Ice structure, China—Xizang, Himalaya Mountains

50-6600

Ice pyramids and other related ablation forms on the northern slope of Mount Xixia Bangma.

Shi, Y.F., Ji, Z.X., Xixiabangma feng diqu kexue kaocha baogao (Report on the Mount Xixia Bangma region scientific expedition), Beijing, Kexue chubanshe (Science Press), 1982, p.74-91, In Chinese. 5 refs.

DLC QE294.H68 1982 Orien China

Mountain glaciers, Glacier ablation, Glacier melting, Glacier surfaces, China—Xizang, Himalaya Mountains

50-6601

Chemical composition of natural water (melt water of ice and snow) of Mount Xixia Bangma region.

Zhang, S., Wu, Z.W., Xixiabangma feng diqu kexue kaocha baogao (Report on the Mount Xixia Bangma region scientific expedition), Beijing, Kexue chubanshe (Science Press), 1982, p.92-97, In Chinese.

DLC QE294.H68 1982 Orien China

Glacier ice, Ice composition, Snow composition, Snowmelt, Meltwater, Water chemistry, China—Xizang, Himalaya Mountains

50-6602

Quaternary geology and geomorphology of Mount Xixia Bangma region.

Liu, D.S., Cui, Z.J., Xixiabangma feng diqu kexue kaocha baogao (Report on the Mount Xixia Bangma region scientific expedition), Beijing, Kexue chubanshe (Science Press), 1982, p.98-126, In Chinese. 2 refs.

DLC QE294.H68 1982 Orien China

Geological surveys, Alpine glaciation, Glacial geology, Glacial deposits, Glacial erosion, Quaternary deposits, Geomorphology, Geochronology, Stratigraphy, China—Xizang, Himalaya Mountains

50-6603

Study on Quaternary moraine debris of Mount Xixia Bangma region.

Zhang, S.Y., Xixiabangma feng diqu kexue kaocha baogao (Report on the Mount Xixia Bangma region scientific expedition), Beijing, Kexue chubanshe (Science Press), 1982, p.127-143, In Chinese. 4 refs.

DLC QE294.H68 1982 Orien China

Glacial deposits, Moraines, Glacial till, Quaternary deposits, Lithology, Mineralogy, Soil analysis, Soil chemistry, Soil composition, China—Xizang, Himalaya Mountains

50-6604

Palynological studies of the Quaternary glacio-aqueous lacustrine deposits of Mount Xixia Bangma.

Chen, S.M., Liang, X.L., Xixiabangma feng diqu kexue kaocha baogao (Report on the Mount Xixia Bangma region scientific expedition), Beijing, Kexue chubanshe (Science Press), 1982, p.144-154, In Chinese. 4 refs.

DLC QE294.H68 1982 Orien China

Glacial deposits, Lacustrine deposits, Quaternary deposits, Palynology, Paleobotany, Paleoclimatology, China—Xizang, Himalaya Mountains

50-6605

Inquiry on ice ages in Mount Xixia Bangma region.

Shi, Y.F., Cui, Z.J., Zheng, B.X., Xixiabangma feng diqu kexue kaocha baogao (Report on the Mount Xixia Bangma region scientific expedition), Beijing, Kexue chubanshe (Science Press), 1982, p.155-176, In Chinese. 4 refs.

DLC QE294.H68 1982 Orien China

Geological surveys, Alpine glaciation, Glacial geology, Glacial deposits, Moraines, Glacial till, Tectonics, Geochronology, Paleoclimatology, China—Xizang, Himalaya Mountains

50-6606

Characteristics of the post-glacial advance and retreat in Mount Xixia Bangma region.

Zheng, B.X., Xixiabangma feng diqu kexue kaocha baogao (Report on the Mount Xixia Bangma region scientific expedition), Beijing, Kexue chubanshe (Science Press), 1982, p.177-191, In Chinese. 9 refs.

DLC QE294.H68 1982 Orien China

Geological surveys, Alpine glaciation, Glacial geology, Glacial deposits, Glacier oscillation, Moraines, Quaternary deposits, Snow line, Geochronology, Paleoclimatology, China—Xizang, Himalaya Mountains

50-6607

Periglacial phenomena found in Mount Xixia Bangma region.

Zheng, B.X., Xie, Z.C., Cui, Z.J., Xixiabangma feng diqu kexue kaocha baogao (Report on the Mount Xixia Bangma region scientific expedition), Beijing, Kexue chubanshe (Science Press), 1982, p.192-210, In Chinese. 9 refs.

DLC QE294.H68 1982 Orien China

Geological surveys, Periglacial processes, Frost weathering, Frost action, Altiplanation, Solifluction, Paleoclimatology, China—Xizang, Himalaya Mountains

50-6608

Discovery of *Quercus semicarpifolia* at Mount Xixia Bangma and its significance for Quaternary research.

Xu, R., Xixiabangma feng diqu kexue kaocha baogao (Report on the Mount Xixia Bangma region scientific expedition), Beijing, Kexue chubanshe (Science Press), 1982, p.356-365, In Chinese. 16 refs.

DLC QE294.H68 1982 Orien China

Paleobotany, Plant ecology, Vegetation patterns, Trees (plants), Fossils, China—Xizang, Himalaya Mountains

50-6609

Weather on the northern slope of the central Himalayas during March to May.

Qian, Z.J., Xixiabangma feng diqu kexue kaocha baogao (Report on the Mount Xixia Bangma region scientific expedition), Beijing, Kexue chubanshe (Science Press), 1982, p.380-402, In Chinese. 2 refs.

DLC QE294.H68 1982 Orien China

Weather observations, Meteorological data, Atmospheric circulation, Atmospheric pressure, Precipitation (meteorology), Air temperature, China—Xizang, Himalaya Mountains

50-6610

Investigation report of some meteorological elements on the northern slope of the central Himalayas during March to May.

Wen, C.J., Qiu, X.F., Qian, Z.J., Xixiabangma feng diqu kexue kaocha baogao (Report on the Mount Xixia Bangma region scientific expedition), Beijing, Kexue chubanshe (Science Press), 1982, p.403-415, In Chinese. 3 refs.

DLC QE294.H68 1982 Orien China

Weather observations, Meteorological data, Meteorological factors, Air temperature, China—Xizang, Himalaya Mountains

50-6611

Preliminary investigation of the clouds on the northern slope regions of Mount Qomolangma and Mount Xixia Bangma during March to May.

Qian, Z.J., Xixiabangma feng diqu kexue kaocha baogao (Report on the Mount Xixia Bangma region scientific expedition), Beijing, Kexue chubanshe (Science Press), 1982, p.416-438, In Chinese. 4 refs.

DLC QE294.H68 1982 Orien China

Cloud cover, Air temperature, Precipitation (meteorology), China—Xizang, Himalaya Mountains

50-6612

Elliptical halos, Bottlinger's rings, and the ice-plate snow-star transition.

Tränkle, E., Riikonen, M., *Applied optics*, Aug. 20, 1996, 35(2), p.4871-4878, 8 refs.

Ice physics, Cloud physics, Ice crystal optics, Ice crystal structure, Light scattering, Light effects, Optical phenomena, Simulation, Reflectivity

50-6613

Metabolism of deep-sea sponges in the Greenland-Norwegian Sea.

Witte, U., Graf, G., *Journal of experimental marine biology and ecology*, June 15, 1996, 198(2), p.223-235, 35 refs.

Marine biology, Ecology, Ocean bottom, Sampling, Biomass, Ecosystems, Oxygen, Heat flux, Boundary layer, Greenland Sea, Norwegian Sea

50-6614

Response of snowmelt hydrology to climate change.

Brubaker, K.L., Rango, A., *Water, air, and soil pollution*, July 1996, 90(1-2), International Clean Water Conference, La Jolla, CA, Nov. 28-30, 1995. Selected papers, p.335-343, 11 refs.

Climatology, Climatic changes, Global warming, River basins, Snow hydrology, Snowmelt, Runoff forecasting, Water supply, Hydrography, Mathematical models

50-6615

Aging effects on translational lattice vibrations in ice I_h.

Fukuzawa, H., Ikeda, T., Hondoh, T., Lipenkov, V.IA., Mae, S., *Physica B*, Apr. 1996, Vol.219/220, PHONONS 95: Proceedings of the Combined Conference of the 4th International Conference on Phonon Physics and the 8th International Conference on Phonon Scattering in Condensed Matter, Sapporo, Japan 23-28 July 1995. Edited by T. Nakayama, S. Tamura, and T. Yagi, p.466-468, 8 refs.

Ice cores, Vibration, Ice physics, Latticed structures, Spectra, Antarctica—Vostok Station

Laser-Raman spectra of Vostok ice recovered from Antarctica have been measured in a frequency range of 10-400/cm in order to observe long-term aging effects on Raman spectra of ice I_h. The authors found that the intensity of the peak at 300/cm increased as the depth of the ice core increased from 500 to 2452 m. Since no change in the peak height was observed by pressurization, the increase of the peak intensity is attributed to the aging effect on a structural change of ice during a very long period from 28,000 to 209,000 yr. Since this peak is assigned to a translational lattice vibration traveling along the hydrogen bonds, it follows that the proton arrangement in the antarctic ice varies with very long term aging. (Auth.)

50-6616

Molecular dynamics studies of proton ordering effects on lattice vibrations in ice I_h.

Itoh, H., Kawamura, K., Hondoh, T., Mae, S., *Physica B*, Apr. 1996, Vol.219/220, PHONONS 95: Proceedings of the Combined Conference of the 4th International Conference on Phonon Physics and the 8th International Conference on Phonon Scattering in Condensed Matter, Sapporo, Japan 23-28 July 1995. Edited by T. Nakayama, S. Tamura, and T.Yagi, p.469-472, 10 refs.

Phase transformations, Spectra, Protons, Ice physics, Doped ice, Vibration

50-6617

Effects of climate change on water supplies in mountainous snowmelt regions.

Rango, A., *World resource review*, Sep. 1995, 7(3), p.315-325, Refs. p.324-325.

Climatic changes, Climatic factors, Water supply, Snowmelt, Global warming, Hydrology, River basins, Runoff, Models, Hydrography, United States—Colorado—Rio Grande, United States—California—Kings River, Canada—British Columbia—Illecillewaet River

50-6618

Dynamic response of high arctic glaciers to global warming and their contribution to sea-level rise.

Lam, J.K.W., Dowdeswell, J.A., *World resource review*, June 1995, 7(2), p.254-267, Refs. p.266-267.

Global warming, Sea level, Temperature effects, Glaciers, Glacier alimentation, Glacier mass balance, Glacier surveys, Mathematical models, Precipitation (meteorology), Climatic changes, Climatic factors, Canada—Northwest Territories—Queen Elizabeth Islands, Norway—Svalbard

50-6619

Permafrost distribution in the northern hemisphere under scenarios of climatic change.

Anisimov, O.A., Nelson, F.E., *Global and planetary change*, Aug. 1996, 14(1-2), p.59-72, 55 refs.

Paleoclimatology, Climatic changes, Global warming, Permafrost distribution, Permafrost transformation, Degradation, Soil mapping, Snow cover effect, Mathematical models, Simulation

50-6620

Relation between productivity and temperature in the Pliocene North Atlantic at the onset of northern hemisphere glaciation: a palynological study.

Versteegh, G.J.M., Brinkhuis, H., Visscher, H., Zonneveld, K.A.F., *Global and planetary change*, Apr. 1996, 11(4), p.155-165, 47 refs.

Paleoclimatology, Climatic changes, Oceanography, Ocean currents, Biomass, Palynology, Bottom sediment, Sedimentation, Drill core analysis, Isotope analysis, Geochronology, Temperature effects, Correlation, Atlantic Ocean

50-6621

Rotatable shortwave curtain antenna operable at very high wind speeds.

Bruger, P., Buchmann, B., Kurrer, K.E., Ozimek, C., *IEEE transactions on broadcasting*, Mar. 1996, 42(1), p.50-54, 3 refs.

Radio communication, Antennas, Superstructures, Design, Ice control, Ice loads, Wind factors, Structural analysis

50-6622

Backward and forward scattering by the melting layer composed of spheroidal hydrometeors at 5-100 GHz.

Zhang, W., Tervonen, J.K., Salonen, E.T., *IEEE transactions on antennas and propagation*, Sep. 1996, 44(9), p.1208-1219, 33 refs.

Precipitation (meteorology), Remote sensing, Radar echoes, Backscattering, Wave propagation, Attenuation, Falling snow, Snow physics, Ice melting, Spheres, Particles, Mathematical models

50-6623

Calibration of a small, low-cost thermal infrared radiometer.

Rapier, C.B., Michael, K.J., *Remote sensing of environment,* May 1996, 56(2), p.97-103, 11 refs.

Remote sensing, Climatology, Meteorological instruments, Atmospheric boundary layer, Surface temperature, Radiometry, Performance, Temperature effects, Accuracy

Two Everest 4000A radiometers were used to measure sea surface temperatures in the southern ocean from the RSV *Aurora Australis* during the periods Aug. 7-Oct. 9, 1993 and Jan. 1-Mar. 1, 1994. On four separate occasions, the radiometers were calibrated under controlled laboratory conditions using a Thermos 60-L cooler, a cool room and a Contherm unit. The calibration results were best when the radiometers and calibration target were allowed to come to equilibrium at a set temperature, yielding r.m.s. differences of 0.1°C between the measured and actual target temperatures. When the radiometers were operated under conditions of rapid temperature change, the r.m.s. differences were found to be as large as 0.6°C. The bias error of the radiometers was found to have changed subsequent to each of their deployments in the southern ocean, which underlines the importance of monitoring changes in the offset of the radiometers in the field. (Auth. mod.)

50-6624

Pliocene climates: the nature of the problem.

Crowley, T.J., *Marine micropaleontology,* Apr. 1996, 27(1-4), p.3-12, 49 refs.

Paleoclimatology, Climatic changes, Global warming, Carbon dioxide, Air temperature, Freezing points, Heat flux, Ice cover effect, Global change, Models, Simulation

50-6625

Depositional and microfaunal response to Pliocene climate change and tectonics in the eastern Gulf of Alaska.

Lagoe, M.B., Zellers, S.D., *Marine micropaleontology,* Apr. 1996, 27(1-4), p.121-140, 53 refs.

Paleoclimatology, Climatic changes, Marine deposits, Marine geology, Stratigraphy, Tectonics, Sediment transport, Glaciation, Glacier oscillation, Ice rafting, Paleoecology, Geochronology, United States—Alaska—Alaska, Gulf

50-6626

Pliocene record in the central Arctic Ocean.

Clark, D.L., *Marine micropaleontology,* Apr. 1996, 27(1-4), p.157-164, 41 refs.

Paleoclimatology, Polar atmospheres, Oceanography, Marine deposits, Stratigraphy, Sedimentation, Drill core analysis, Isotope analysis, Arctic Ocean

50-6627

No evidence for extreme, long term warming in early Pliocene sediments of the Southern Ocean.

Burckle, L.H., Mortlock, R., Rudolph, S., *Marine micropaleontology,* Apr. 1996, 27(1-4), p.215-226, 56 refs.

Paleoclimatology, Oceanography, Climatic changes, Global warming, Water temperature, Marine deposits, Glacial geology, Glacier melting, Drill core analysis, Geochemistry, Correlation

During the past 10 years there has been considerable debate with respect to the response of the antarctic ice sheets to early Pliocene warmth. Here, this question is approached by using biogenic opal and carbonate in deep-sea sediments as proxy for paleoceanographic change. During the present day, these measures are largely dictated by the position of the Antarctic Polar Front (APF), with biogenic carbonate exhibiting an increase north of the APF and biogenic opal increasing to the south. That the carbonate/opal transition zone is a reliable feature in deep-sea sediments is evidenced by the fact that it is recorded north of its present position during the Last Glacial Maximum (LGM) and to the south of it during oxygen isotope stage 11, a warmer than present interglacial. When these proxies are applied to southern ocean sediments, high frequency glacial/interglacial changes are seen in the Pliocene and early Pleistocene. What appears to be a major glacial is recorded at about 4.5 Myr B.P. Such data do not support any appreciable warming of surface waters near the antarctic continent; neither do they support any claims of high (ca. 20°) sea-level air temperatures over the East Antarctic Ice Sheet (EAIS). It is concluded that there is no evidence for significant drawdown of EAIS during early Pliocene warmth. (Auth. mod.)

50-6628

Major deglaciation of east Antarctica during the early Late Pliocene? Not likely from a marine perspective.

Warnke, D.A., Marzo, B., Hodell, D.A., *Marine micropaleontology,* Apr. 1996, 27(1-4), p.237-251, 63 refs.

Paleoclimatology, Glacier oscillation, Glacier melting, Ice volume, Icebergs, Ice rafting, Glacial deposits, Marine deposits, Sampling, Geochronology

The authors conducted an integrated study of ice-rafted debris (IRD) and oxygen isotopes using samples from the early Late Pliocene Gauss Chron from ODP Site 114-704 on the Meteor Rise in the subantarctic South Atlantic. During the early Gauss Chron, the oxygen isotopic ratios are generally less than their respective Holocene values. The lowest values in this record can accommodate a warming of about 2.5°C or a sea-level rise of about 50 m, but not both, and probably result from some warming and a small reduction in global ice volume. In order to reach the site, this material must have been transported by large, tabular icebergs derived from antarctic ice shelves or ice tongues, similar to occasional large modern icebergs. This combined record suggests strongly that the antarctic ice sheet was essentially intact; some warming at the drill site is indicated, but not a major reduction in ice-volume on Antarctica. (Auth. mod.)

50-6629

Miocene and Pliocene paleoclimate of the Dry Valleys region, Southern Victoria Land: a geomorphological approach.

Marchant, D.R., Denton, G.H., *Marine micropaleontology,* Apr. 1996, 27(1-4), p.253-271, Refs. p.269-271.

Paleoclimatology, Climatic changes, Microclimatology, Glacier melting, Glacial geology, Geomorphology, Volcanic ash, Periglacial processes, Cryoturbation, Geochronology, Antarctica—Victoria Land

This paper presents geomorphic data from the Dry Valleys region of southern Victoria Land that indicate persistent cold-desert conditions and imply an enduring East Antarctic Ice Sheet since middle Miocene time. The authors acknowledge that some warming probably occurred in the Dry Valleys region during Pliocene time, but this warming was likely less than 3°C to 8°C and was insufficient to cause significant geomorphic change/landscape evolution of the Dry Valleys region. This paleoclimate record does not incorporate the effects of potential surface uplift in the Dry Valleys region. (Auth. mod.)

50-6630

Marine and terrestrial Sirius Group succession, middle Beardmore Glacier-Queen Alexandra Range, Transantarctic Mountains, Antarctica.

Webb, P.N., Harwood, D.M., Mabin, M.G.C., McKelvey, B.C., *Marine micropaleontology,* Apr. 1996, 27(1-4), p.273-297, 48 refs.

Glacial geology, Earth crust, Glacier flow, Glacial deposits, Stratigraphy, Tectonics, Marine deposits, Paleoecology, Antarctica—Beardmore Glacier

In this paper the authors develop the argument that the Beardmore valley was earlier occupied by a major arm of the Ross Sea, having significant implications regarding the late Cenozoic ice sheet and uplift histories for the Beardmore Glacier-Queen Alexandra Range of Antarctica. (Auth. mod.)

50-6631

Effects of climatic warming on northern trees: testing the frost damage hypothesis with meteorological data from provenance transfer experiments.

Hänninen, H., *Scandinavian journal of forest research,* 1996, 11(1), p.17-25, 31 refs.

Plant ecology, Trees (plants), Global warming, Phenology, Growth, Frost resistance, Acclimatization, Damage, Meteorological data, Temperature effects, Mathematical models, Simulation

50-6632

Climate connections between the hemisphere revealed by deep sea sediment core/ice core correlations.

Charles, C.D., Lynch-Stieglitz, J., Ninnemann, U.S., Fairbanks, R.G., *Earth and planetary science letters,* July 1996, 142(1-2), p.19-27, 33 refs.

Paleoclimatology, Climatic changes, Global change, Marine atmospheres, Ice sheets, Ice cores, Ocean currents, Marine deposits, Paleoecology, Geochemistry, Sampling, Geochronology, Antarctica—Vostok Station

Correlation of southern ocean deep sea sediment core records with ice core records of polar climate delineates with unprecedented detail the relationship between high latitude climate and the ocean's thermohaline circulation over the last 80,000 years. These observations suggest that, while North Atlantic Deep Water variability manifests itself clearly in southern ocean nutrient proxy records over periods as short as 500 yr, this deep water variability did not promote a direct link between climate variability in the high latitudes of the two hemispheres on millennial timescales. In particular, the proxy records indicate that, on average, Northern Hemisphere climate fluctuations lagged those of the Southern Hemisphere by 1500 yr. (Auth. mod.)

50-6633

Uranium-series disequilibrium, sedimentation, diatom frustules, and paleoclimate change in Lake Baikal.

Edgington, D.N., Robbins, J.A., Colman, S.M., Orlandini, K.A., Gustin, M.P., *Earth and planetary science letters,* July 1996, 142(1-2), p.29-42, 29 refs.

Paleoclimatology, Climatic changes, Lacustrine deposits, Surface drainage, Mass transfer, Geochemistry, Weathering, Sedimentation, Sampling, Radioactive isotopes, Isotope analysis, Geochronology, Russia—Baykal, Lake

50-6634

Quaternary geology of the Buchans area, Newfoundland: implications for mineral exploration.

Klassen, R.A., Murton, J.B., *Canadian journal of earth sciences,* Feb. 1996, 33(2), p.363-377, With French summary. 57 refs.

Minerals, Geological surveys, Quaternary deposits, Glacial geology, Glacial deposits, Lacustrine deposits, Glacier flow, Exploration, Sedimentation, Geochemistry, Stratigraphy, Canada—Newfoundland

50-6635

ADCP-referenced geostrophic circulation in the Bering Sea basin.

Cokelet, E.D., Schall, M.L., Dougherty, D.M., *Journal of physical oceanography,* July 1996, 26(7), p.1113-1128, 47 refs.

Oceanography, Oceanographic surveys, Ocean currents, Velocity measurement, Hydrography, Underwater acoustics, Profiles, Fluid dynamics, Bering Sea

50-6636

Chlorine activation and ozone depletion in the Arctic vortex: observations by the Halogen Occultation Experiment on the Upper Atmosphere Research Satellite.

Müller, R., Crutzen, P.J., Grooß, J.U., Brühl, C., Russell, J.M., III, Tuck, A.F., *Journal of geophysical research,* May 20, 1996, 101(D7), p.12,531-12,554, Refs. p.12,552-12,554.

Climatology, Polar atmospheres, Air pollution, Stratosphere, Atmospheric composition, Chemical properties, Aerosols, Ozone, Turbulent diffusion, Degradation, Radiometry, Spacecraft, Seasonal variations

50-6637

Interpretation of nitric oxide profile observed in January 1992 over Kiruna.

Kondo, Y., et al, *Journal of geophysical research,* May 20, 1996, 101(D7), p.12,555-12,566, 40 refs.

Climatology, Polar atmospheres, Stratosphere, Atmospheric composition, Degradation, Turbulent diffusion, Photochemical reactions, Aerosols, Sampling, Sounding, Profiles, Sweden—Kiruna

50-6638

Model study of polar stratospheric clouds and their effect on stratospheric ozone. 1. Model description.

De Rudder, A., Larsen, N., Tie, X.X., Brasseur, G.P., Granier, C., *Journal of geophysical research,* May 20,1996, 101(D7), p.12,567-12,574, 37 refs.

Climatology, Polar atmospheres, Polar stratospheric clouds, Classifications, Stratosphere, Cloud physics, Particle size distribution, Mathematical models

The authors have included detailed microphysical processes accounting for the formation of polar stratospheric clouds (PSC) into a global chemical/dynamical two-dimensional model to study the effect of heterogeneous reactions occurring on the surface of PSCs on stratospheric ozone. The model explicitly calculates the formation of the PSC particles in terms of heterogeneous nucleation, condensation, and sedimentation. The transport of the particles and heterogeneous reactions on the particles are also represented in the model. The calculated PSC particles show that the distributions of PSCs in the Arctic and in Antarctica are very different. Over Antarctica, nitric acid trihydrate particles (type I PSCs) are formed from early June to late Sep., while in the Arctic, type I PSCs are formed only in Jan. Ice crystal clouds (type II PSCs) are present over Antarctica in Aug., but are not seen in the Arctic. (Auth. mod.)

50-6639

Model study of polar stratospheric clouds and their effect on stratospheric ozone. 2. Model results.

Tie, X.X., Brasseur, G.P., Granier, C., De Rudder, A., Larsen, N., *Journal of geophysical research,* May 20, 1996, 101(D7), p.12,575-12,584, 37 refs.

Climatology, Polar atmospheres, Stratosphere, Atmospheric composition, Polar stratospheric clouds, Heterogeneous nucleation, Cloud physics, Aerosols, Particle size distribution, Mathematical models

The authors use the detailed microphysical/chemical/dynamical two-dimensional model described in part I [De Rudder et al., this issue] to study the effect of heterogeneous reactions occurring on the surface of polar stratospheric clouds (PSCs) on stratospheric ozone. The calculations show that these heterogeneous reactions are the likely causes of the ozone decrease observed from 1980 to 1990 in both Antarctica and the Arctic. The calculation shows that the dense sulfate aerosol cloud produced by the eruption of Mount Pinatubo in 1991 has enhanced the formation rate of type I PSCs in the Arctic and the Antarctic. The effect on the ozone depletion in the Antarctic is, however, limited due to fact that the conversion from $ClONO_2$ to ClO on PSCs is almost "saturated" under non-volcanic conditions. For potential ozone depletion, the enlargement in the area covered by PSCs may therefore be more important than the increase in PSC density. The calculation also shows that, in the future, the density of PSCs in the Arctic could be enhanced owing to the potential emission of water vapor and nitrogen species by high altitude aircraft. (Auth. mod.)

50-6640

Measurements of PAN, alkyl nitrates, ozone, and hydrocarbons during spring in interior Alaska.

Beine, H.J., Jaffe, D.A., Blake, D.R., Atlas, E., Harris, J., *Journal of geophysical research,* May 20, 1996, 101(D7), p.12,613-12,619, 32 refs.

Climatology, Forest ecosystems, Atmospheric boundary layer, Atmospheric composition, Aerosols, Air pollution, Turbulent diffusion, Seasonal variations, Ozone, Hydrocarbons, Sampling, Synoptic meteorology, Statistical analysis, United States—Alaska

50-6641

Atmospheric deposition of reactive nitrogen oxides and ozone in a temperate deciduous forest and a subarctic woodland. 1. Measurements and mechanisms.

Munger, J.W., et al, *Journal of geophysical research,* May 20, 1996, 101(D7), p.12,639-12,657, Refs. p.12,656-12,657.

Climatology, Forest canopy, Atmospheric composition, Air pollution, Atmospheric boundary layer, Sedimentation, Turbulent exchange, Aerosols, Ozone, Sampling, Seasonal variations, Environmental tests, Canada—Quebec

50-6642

Role of sediment-laden underflows in lake sedimentation: glacier fed Peyto Lake, Canada.

Chikita, K., *Hokkaido University. Faculty of Science. Journal. Series VII (Geophysics),* Feb. 1992, 9(2), p.211-224, 13 refs.

Glacial lakes, Meltwater, Outwash, Suspended sediments, Bottom sediment, Lacustrine deposits, Sediment transport, Canada—Alberta—Peyto Lake

50-6643

On the embryo in graupel particles observed in Greenland.

Harimaya, T., Kikuchi, K., Sakurai, K., *Hokkaido University. Faculty of Science. Journal. Series VII (Geophysics),* Feb. 1992, 9(2), p.225-234, 8 refs.

Snow pellets, Snow crystal nuclei, Snow crystal growth, Ice crystal adhesion, Coalescence, Cloud physics, Greenland

50-6644

Morphological studies on the polycrystalline snow germs.

Kikuchi, K., Harada, M., Uyeda, H., *Hokkaido University. Faculty of Science. Journal. Series VII (Geophysics),* Feb. 1992, 9(2), p.235-251, 16 refs.

Snow crystal nuclei, Snow crystal growth, Snow crystal structure, Ice needles, Ice fog, Ice crystal replicas

From among a number of microphotographs of ice and snow crystals photographed in the ice needle and ice fog phenomena observed in the arctic and antarctic regions, polycrystalline initial ice crystals (poly-snow germs) were selected and classified into 12 types. Most of them were crossed-plates type and their formation rate was approximately 5%. To investigate the shapes of artificial poly-snow germs and their production rate, laboratory experiments using a cloud chamber were carried out under temperature conditions between -18 and -42°C. As a result, almost all shapes that were observed in nature were produced in the chamber and the production rate was less than 5%. This value was similar to that of observational results. As one mechanism of the growth of these poly-snow germs, the cubic structure model which was introduced for snow polycrystals (Furukawa 1982) might be possible. (Auth.)

50-6645

Merging processes of band echoes observed by radar in the winter monsoon seasons in Hokkaido.

Kobayashi, F., Kikuchi, K., Uyeda, H., *Hokkaido University. Faculty of Science. Journal. Series VII (Geophysics),* Feb. 1992, 9(2), p.303-316, 8 refs.

Snowstorms, Snowfall, Cloud cover, Clouds (meteorology), Wind (meteorology), Radar tracking, Radar echoes, Weather forecasting, Japan—Hokkaido

50-6646

Study of remote sensing application in the loess plateau of north Shaanxi Province. [Shanbei huangtu gaoyuan diqu yaogan yingyong yanjiu]

Chinese Academy of Sciences. Institute of Remote Sensing Applications, Beijing (Zhongguo kexueyuan Yaogan yingyong yanjiusuo), Beijing, Kexue chubanshe (Science Press), 1991, 261p. + plates, In Chinese with English table of contents and preface. Refs. passim.

DLC G70.5.C6S53 1991 Orien China

Loess, Soil surveys, Soil mapping, Soil erosion, Soil conservation, Land reclamation, Regional planning, Spaceborne photography, China—Shaanxi Province

50-6647

Space imagery as a basis for modeling the dynamics of thermokarst lake plains.

Viktorov, A.S., *Mapping sciences and remote sensing,* Jan.-Mar. 1996, 33(1), p.61-71, 5 refs.

Spaceborne photography, Geophysical surveys, Tundra terrain, Thermokarst lakes, Thermokarst development, Landscape development, Plains, Sensor mapping, Soil mapping, Mathematical models, Image processing

50-6648

Dynamical influences on the antarctic ozone hole.

Harvey, M.W., Fraser, G.J., *Weather,* Aug. 1996, 51(8), p.266-273, 5 refs.

Climatology, Stratosphere, Atmospheric composition, Remote sensing, Air pollution, Ozone, Turbulent boundary layer, Photochemical reactions, Atmospheric circulation, Spectroscopy, Data processing, Statistical analysis

In a recent undergraduate research project, a zonal harmonic analysis was performed on data from the Total Ozone Mapping Spectrometer (TOMS) instrument on board the Nimbus-7 satellite. The method has the potential to yield valuable insights into antarctic polar vortex-planetary wave interactions and the relationship between such interactions and photochemical ozone depletion. In addition, the nominal cost and easy accessibility of the data, together with the relative simplicity of the data processing involved, make the method described here a useful educational tool in both undergraduate and advanced secondary level meteorology courses. (Auth. mod.)

50-6649

Dynamic research by remote sensing on typical region in the Yellow River Valley. [Huanghe liuyu dianxing diqu yaogan dongtai yanjiu]

Tian, G.L., ed, Beijing, Kexue chubanshe (Science Press), 1990, 267p. + maps and plates, In Chinese with English table of contents, and title on back cover. Refs. passim. For selected papers see 50-6650 through 50-6662.

DLC G70.5.C6H83 1990 Orien China

Snow surveys, Snow cover distribution, Snow hydrology, Snowmelt, Stream flow, Runoff forecasting, Spaceborne photography, China—Qinghai Province, China—Yellow River

50-6650

Summary of satellite snow cover monitoring and study on snowmelt runoff forecasting in the upper reaches of the Yellow River.

Zeng, Q.Z., Huanghe liuyu dianxing diqu yaogan dongtai yanjiu (Dynamic research by remote sensing on typical region in the Yellow River Valley). Edited by G.L. Tian, Beijing, Kexue chubanshe (Science Press), 1990, p.1-13, In Chinese with English summary. 8 refs.

DLC G70.5.C6H83 1990 Orien China

Snow surveys, Snow cover distribution, Snow hydrology, Snowmelt, Stream flow, Runoff forecasting, Spaceborne photography, Statistical analysis, Computerized simulation, China—Qinghai Province, China—Yellow River

50-6651

Distribution characteristics of winter-spring snow cover in the upper reaches of the Yellow River.

Chen, X.Z., Zeng, Q.Z., Song, Q., Huanghe liuyu dianxing diqu yaogan dongtai yanjiu (Dynamic research by remote sensing on typical region in the Yellow River Valley). Edited by G.L. Tian, Beijing, Kexue chubanshe (Science Press), 1990, p.14-19, In Chinese with English summary.

DLC G70.5.C6H83 1990 Orien China

Snow surveys, Snow cover distribution, Snow hydrology, Snowmelt, Stream flow, Runoff forecasting, Spaceborne photography, China—Qinghai Province, China—Yellow River

50-6652

Middle period of time forecast of spring snowmelt runoff in the upper reaches of the Yellow River.

Lan, Y.C., Chen, X.Z., Zeng, Q.Z., Jin, D.H., Huanghe liuyu dianxing diqu yaogan dongtai yanjiu (Dynamic research by remote sensing on typical region in the Yellow River Valley). Edited by G.L. Tian, Beijing, Kexue chubanshe (Science Press), 1990, p.20-29, In Chinese with English summary. 7 refs.

DLC G70.5.C6H83 1990 Orien China

Snow surveys, Snow cover distribution, Snow hydrology, Snowmelt, Stream flow, Runoff forecasting, Spaceborne photography, Statistical analysis, Computerized simulation, China—Qinghai Province, China—Yellow River

50-6653

Application of NOAA meteorological satellite data in snow cover monitoring in the upper reaches of the Yellow River.

Chen, X.Z., Lan, Y.C., Zeng, Q.Z., Jin, D.H., Huanghe liuyu dianxing diqu yaogan dongtai yanjiu (Dynamic research by remote sensing on typical region in the Yellow River Valley). Edited by G.L. Tian, Beijing, Kexue chubanshe (Science Press), 1990, p.30-36, In Chinese with English summary.

DLC G70.5.C6H83 1990 Orien China

Snow surveys, Snow cover distribution, Snow hydrology, Snowmelt, Stream flow, Runoff forecasting, Spaceborne photography, China—Qinghai Province, China—Yellow River

50-6654

Studies on prediction method of snowmelt runoff in the upper reaches of the Yellow River.

Song, Q., Huanghe liuyu dianxing diqu yaogan dongtai yanjiu (Dynamic research by remote sensing on typical region in the Yellow River Valley). Edited by G.L. Tian, Beijing, Kexue chubanshe (Science Press), 1990, p.37-49, In Chinese with English summary. 11 refs.

DLC G70.5.C6H83 1990 Orien China

Snow surveys, Snow cover distribution, Snow hydrology, Snowmelt, Stream flow, Runoff forecasting, Spaceborne photography, Statistical analysis, Mathematical models, China—Qinghai Province, China—Yellow River

50-6655

Information System on Ice, Snow and Water Resources of Animaqing region for satellite snow-cover monitoring.

Feng, X.Z., Wang, J., Zeng, Q.Z., Huanghe liuyu dianxing diqu yaogan dongtai yanjiu (Dynamic research by remote sensing on typical region in the Yellow River Valley). Edited by G.L. Tian, Beijing, Kexue chubanshe (Science Press), 1990, p.50-61, In Chinese with English summary. 16 refs.

DLC G70.5.C6H83 1990 Orien China

Snow surveys, Snow cover distribution, Snow hydrology, Snowmelt, Stream flow, Runoff forecasting, Spaceborne photography, Data processing, Computerized simulation, China—Qinghai Province, China—Yellow River

50-6656

Inter-operation and partial application of Ice, Snow and Water Resources Information System in the upper reaches of the Yellow River.

Wang, J., Feng, X.Z., Sun, W.X., Jin, D.H., Huanghe liuyu dianxing diqu yaogan dongtai yanjiu (Dynamic research by remote sensing on typical region in the Yellow River Valley). Edited by G.L. Tian, Beijing, Kexue chubanshe (Science Press), 1990, p.62-70, In Chinese with English summary.

DLC G70.5.C6H83 1990 Orien China

Snow surveys, Snow cover distribution, Snow hydrology, Snowmelt, Stream flow, Runoff forecasting, Computer programs, China—Qinghai Province, China—Yellow River

50-6657

Dynamic monitoring information system for snow of remote sensing imagery.

Liu, Z.K., Lai, H.N., Xiao, J.Y., Huanghe liuyu dianxing diqu yaogan dongtai yanjiu (Dynamic research by remote sensing on typical region in the Yellow River Valley). Edited by G.L. Tian, Beijing, Kexue chubanshe (Science Press), 1990, p.71-79, In Chinese with English summary. 9 refs.

DLC G70.5.C6H83 1990 Orien China

Snow surveys, Snow cover distribution, Snow hydrology, Snowmelt, Stream flow, Runoff forecasting, Spaceborne photography, Image processing, Computerized simulation

50-6658

Improved fuzzy clustering algorithm for snow recognition.

Liu, Z.K., Lai, H.N., Xiao, J.Y., Huanghe liuyu dianxing diqu yaogan dongtai yanjiu (Dynamic research by remote sensing on typical region in the Yellow River Valley). Edited by G.L. Tian, Beijing, Kexue chubanshe (Science Press), 1990, p.80-89, In Chinese with English summary. 4 refs.

DLC G70.5.C6H83 1990 Orien China

Snow surveys, Snow cover distribution, Snow hydrology, Snowmelt, Runoff forecasting, Terrain identification, Spaceborne photography, Image processing, Computerized simulation, Statistical analysis

50-6659

Application of subspace method in snow recognition.

Liu, Z.K., Xiao, J.Y., Luo, X.L., Huanghe liuyu dianxing diqu yaogan dongtai yanjiu (Dynamic research by remote sensing on typical region in the Yellow River Valley). Edited by G.L. Tian, Beijing, Kexue chubanshe (Science Press), 1990, p.90-95, In Chinese with English summary. 6 refs.

DLC G70.5.C6H83 1990 Orien China

Snow surveys, Snow cover distribution, Snow hydrology, Snowmelt, Terrain identification, Runoff forecasting, Spaceborne photography, Image processing, Computerized simulation

50-6660

Fuzzy region segmentation technique of remote sensing imagery.

Liu, Z.K., Xiao, J.Y., Huanghe liuyu dianxing diqu yaogan dongtai yanjiu (Dynamic research by remote sensing on typical region in the Yellow River Valley). Edited by G.L. Tian, Beijing, Kexue chubanshe (Science Press), 1990, p.96-101, In Chinese with English summary. 8 refs.

DLC G70.5.C6H83 1990 Orien China

Snow surveys, Snow cover distribution, Snow hydrology, Snowmelt, Terrain identification, Runoff forecasting, Spaceborne photography, Image processing, Computerized simulation

50-6661

Study on the remote sensing information model of soil moisture.

Ma, A.N., Xue, Y., Huanghe liuyu dianxing diqu yaogan dongtai yanjiu (Dynamic research by remote sensing on typical region in the Yellow River Valley). Edited by G.L. Tian, Beijing, Kexue chubanshe (Science Press), 1990, p.133-140, In Chinese with English summary. 9 refs.

DLC G70.5.C6H83 1990 Orien China

Soil surveys, Soil mapping, Soil water, Moisture detection, Spaceborne photography, Image processing, Computerized simulation

50-6662

Estimation of daily evapotranspiration from one time-of-day thermal infrared temperature.

Li, F.Q., Tian, G.L., Sui, H.Z., Li, J.J., Huanghe liuyu dianxing diqu yaogan dongtai yanjiu (Dynamic research by remote sensing on typical region in the Yellow River Valley). Edited by G.L. Tian, Beijing, Kexue chubanshe (Science Press), 1990, p.141-150, In Chinese with English summary. 12 refs.

DLC G70.5.C6H83 1990 Orien China

Soil surveys, Soil air interface, Soil temperature, Air temperature, Evapotranspiration, Spaceborne photography, Image processing, Computerized simulation, Statistical analysis

50-6663

Study of the surface circulation to the north of Bransfield Strait, Antarctica. [Estudo da circulação superficial ao norte do Estreito de Bransfield, Antártica]

de Souza, R.B., São José dos Campos, Instituto Nacional de Pesquisas Espaciais, Nov. 1992, 161p., INPE-5742-TDI/503, Master's thesis. In Spanish with English summary. Refs. p.149-161.

Oceanography, Oceanographic surveys, Ocean currents, Drift stations, Velocity measurement, Atmospheric boundary layer, Atmospheric pressure, Air water interactions, Antarctica—Bransfield Strait

A study of the mesoscale circulation to the north of Bransfield Strait using the displacement trajectory of a Brazilian drifting buoy, tracked by NOAA 10 and 11 satellites in 1989, is presented. Buoy positional data, together with *in situ* oceanographic and meteorological data, were used to obtain a detailed description of the surface current. With a mean velocity of 7.5 cm/s and a highly zonal direction, the current derived from the buoy trajectory was in great part forced by winds, in agreement with the Ekman model. The ARGOS-compatible Brazilian drifting buoy is shown to be an efficient tool in mesoscale studies, offering the possibility of delineating oceanic fronts, fluxes of water masses with known characteristics, and atmospheric and tidal influences on the surface currents. Results of such studies can be used as support to more complex studies in the areas of air-sea interaction, climatology, and distribution of planktonic organisms of economic interest. (Auth. mod.)

50-6664

Impact of potential TV tower icing on a nearby proposed expressway.

Courtney, F.E., International Specialty Conference on the Role of Meteorology in Managing the Environment in the 90s, Scottsdale, AZ, Jan. 1993. Proceedings, Pittsburgh, Air & Waste Management Association, 1993, p.323-326, 2 refs.

DLC QC851.R37

Safety, Roads, Antennas, Power line icing, Ice accretion, Icefalls, Cracking (fracturing), Protection, Countermeasures, Meteorological data, Icing rate, Statistical analysis

50-6665

Mixed-phase cloud scheme based on a single prognostic equation.

Tremblay, A., Glazer, A., Yu, W., Benoit, R., *Tellus*, Aug. 1996, 48A(4), p.483-500, 40 refs.

Precipitation (meteorology), Cloud physics, Supercooled clouds, Solid phases, Liquid phases, Phase transformations, Ice crystal growth, Water content, Upwelling, Saturation, Forecasting, Mathematical models, Simulation

50-6666

On the ice-ocean response to wind forcing.

Omstedt, A., Nyberg, L., Leppäranta, M., *Tellus*, Aug. 1996, 48A(4), p.593-606, 17 refs.

Air ice water interaction, Oceanography, Sea ice, Ice floes, Drift, Ice water interface, Marine atmospheres, Wind factors, Turbulent boundary layer, Shear stress, Stress concentration, Mathematical models

50-6667

Fifteen years of arctic acoustics and ice camps.

Von der Heydt, K., Baggeroer, A.B., *Oceanus*, 1994, 37(2), p.2-5.

Oceanography, Oceanographic surveys, Expeditions, Ice mechanics, Ice edge, Ice water interface, Drift stations, Ice acoustics, Underwater acoustics, Wave propagation, Research projects, Arctic Ocean

50-6668

Tracing radioactive contamination in the Siberian Arctic.

Sayles, F.L., Panteleyev, G.P., Livingston, H.D., *Oceanus*, 1994, 37(2), p.6-8.

Oceanography, Radioactive wastes, Fallout, Water pollution, Deltas, Estuaries, Environmental impact, Environmental tests, Expeditions, Sampling, Russia—Siberia

50-6669

Deep water formation in the Greenland Sea.

Pawlowicz, R.A., Lynch, J.F., Owens, W.B., Worcester, P.F., *Oceanus*, 1994, 37(2), p.9-11.

Oceanography, Oceanographic surveys, Ocean currents, Convection, Water temperature, Hydrography, Sea ice distribution, Ice water interface, Ice cover effect, Greenland Sea

50-6670

Maintaining the thermohaline circulation.

Mauritzen, C., Owens, W.B., *Oceanus*, 1994, 37(2), p.12-13.

Oceanography, Ocean currents, Hydrography, Heat flux, Upwelling, Density (mass/volume), Convection, Ice cover effect, Arctic Ocean

50-6671

Dense water formation on arctic shelves.

Gawarkiewicz, G., Chapman, D.C., *Oceanus*, 1994, 37(2), p.14-16.

Oceanography, Ice water interface, Ice shelves, Ocean currents, Salinity, Polynyas, Stratification, Density (mass/volume), Mathematical models, Simulation, Arctic Ocean

50-6672

Exploring the Barents Sea polar front.

Gawarkiewicz, G., Plueddemann, A.J., *Oceanus*, 1994, 37(2), p.17-19.

Oceanography, Ocean currents, Boundary layer, Hydrography, Bottom topography, Topographic effects, Water transport, Barents Sea

50-6673

Buoy for all arctic seasons: the Ice-Ocean Environmental Buoy.

Honjo, S.S., *Oceanus*, 1994, 37(2), p.20-23.

Oceanography, Oceanographic surveys, Sampling, Air ice water interaction, Drift stations, Design, Sensors, Performance, Telemetering equipment, Arctic Ocean

50-6674

Glimpse beneath the ice.

Plueddemann, A.J., *Oceanus,* 1994, 37(2), p.24-26.

Oceanography, Drift stations, Hydrography, Subglacial observations, Pack ice, Gravity waves, Wave propagation, Tidal currents, Ice cover effect, Arctic Ocean

50-6675

Acoustics probe sea-ice mechanics.

Rajan, S.D., *Oceanus,* 1994, 37(2), p.27-28.

Oceanography, Sea ice, Ice mechanics, Physical properties, Ice acoustics, Underwater acoustics, Sound waves, Wave propagation, Attenuation, Velocity measurement, Ice cover effect, Arctic Ocean

50-6676

Arctic infrastructure—the need for dedicated Arctic research support.

Pittenger, R.F., *Oceanus,* 1994, 37(2), p.29-32.

Oceanography, Research projects, Oceanographic surveys, Ships, Icebreakers, Specifications, Construction, Arctic Ocean

50-6677

Icebreakers transit Arctic for global climate studies. *Oceanus,* 1994, 37(2), p.33.

Oceanography, Climatology, Oceanographic surveys, Icebreakers, Climatic changes, Arctic Ocean

50-6678

Contribution to the importance of soil erosion in the neighborhood of the tree line—evaluations from a basal geomorphological map 1:10,000 in metamorphic bedrocks of the Kreuzeckgruppe, Austrian Central Alps. [Zur Bedeutung von Formen der Hangerosion im Umkreis der Waldgrenze—Ergebnisse der Auswertung einer geomorphologischen Basiskarte 1:10,000 aus dem Kristallin der Kreuzeckgruppe/Kärnten/Österreich]

Stocker, E., *Revue de géographie alpine,* 1996, 84(2), p.67-76, 122-123, In German with French and English summaries. 20 refs.

Alpine landscapes, Geomorphology, Forest lines, Periglacial processes, Soil erosion, Bedrock, Mass movements (geology), Cryoturbation, Freeze thaw cycles, Avalanche erosion, Austria—Alps

50-6679

Photodissociation of condensed films of chlorine dioxide.

Lanzendorf, E.J., Kummel, A.C., *Geophysical research letters,* June 1, 1996, 23(12), p.1521-1524, 26 refs.

Polar atmospheres, Aerosols, Stratosphere, Ozone, Cloud physics, Photochemical reactions, Condensation, Simulation, Phase transformations, Spectroscopy

The photochemistry of condensed films of OClO was examined with photofragment spectroscopy. Photolysis of multilayers of OClO on a polycrystalline Pt surface with 355 nm light yields predominantly atomic O, O_2, atomic Cl, and ClO photofragments. The authors measured the quantum yield for the Cl product channel to be 0.8, which is some 800 times higher than reported values for the non-resonant gas-phase photolysis of OClO. This result may have implications for stratospheric ozone chemistry. (Auth. mod.)

50-6680

Numerical simulation of the dynamical response of the arctic vortex to aerosol-associated chemical perturbations in the lower stratosphere.

Zhao, X.P., Turco, R.P., Kao, C.Y.J., Elliott, S., *Geophysical research letters,* June 1, 1996, 23(12), p.1525-1528, 15 refs.

Climatology, Polar atmospheres, Stratosphere, Atmospheric composition, Degradation, Ozone, Aerosols, Heterogeneous nucleation, Photochemical reactions, Wind factors, Radiant cooling, Volcanic ash, Simulation

50-6681

Ground-based measurements of OClO and HCl in austral spring 1993 at Arrival Heights, Antarctica.

Kreher, K., Keys, J.G., Johnston, P.V., Platt, U., Liu, X., *Geophysical research letters,* June 1, 1996, 23(12), p.1545-1548, 19 refs.

Polar atmospheres, Climatology, Atmospheric composition, Degradation, Stratosphere, Spectroscopy, Aerosols, Seasonal variations, Antarctica—Arrival Heights

Ground-based measurements of stratospheric OClO and HCl total columns are reported. The data were obtained during the spring season of 1993 at Arrival Heights using zenith sky and direct sun absorption spectroscopy in the visible and infrared spectral regions. Together these data sets represent complementary measurements of chlorine species in Antarctica over an extended period in spring. To illustrate aspects of antarctic stratospheric chemistry and dynamics that are significant in current studies of ozone depletion, the OClO and HCl data are supplemented by simultaneously measured NO_2 data as well as ancillary data from other sources. Comparison of the data with total ozone and stratospheric temperature records shows that the springtime chlorine variations are in agreement with currently accepted models of antarctic ozone depletion chemistry. (Auth. mod.)

50-6682

Low-temperature photochemistry of submicrometer nitric acid and ammonium nitrate layers.

Koch, T.G., Holmes, N.S., Roddis, T.B., Sodeau, J.R., *Journal of physical chemistry,* July 4, 1996, 100(27), p.11402-11407, 34 refs.

Climatology, Polar atmospheres, Cloud physics, Aerosols, Hydrates, Condensation, Heterogeneous nucleation, Photochemical reactions, Simulation

Reflection-absorption infrared spectroscopy has been employed in order to investigate the low-temperature photochemistry (90-140 K) of thin films of nitric acid and ammonium nitrate grown *in vacuo.* Photolysis of amorphous nitric acid hydrate, the crystalline dihydrate and trihydrate at λ>230 nm resulted in the formation of molecular nitric acid due to rapid protonation of the excited nitrate ion. Secondary photolysis of $HONO_2$ produced NO_2 and NO. If a neat film of molecular, anhydrous nitric acid was irradiated, nitrate and nitronium ions were observed. In contrast, ammonium nitrate photolysis at 140 K did not result in a proton transfer to produce NH_3 and $HONO_2$ but in the formation of the peroxynitrite ion ($ONOO^-$) as a precursor for NO_2^-. Molecular dinitrogen tetraoxide and nitrous oxide were also detected in the film. Mechanistic details and possible implications for the chemistry of the polar atmosphere are discussed. (Auth. mod.)

50-6683

Observations of thermospheric horizontal neutral winds at Watson Lake, Yukon Territory (Λ = 65°N).

Niciejewski, R.J., Killeen, T.L., Solomon, S.C., *Journal of geophysical research,* Jan. 1, 1996, 101(A1), p.241-259, 25 refs.

Polar atmospheres, Wind direction, Solar radiation, Radiant heating, Geomagnetism, Atmospheric disturbances, Atmospheric electricity, Spectroscopy, Canada—Yukon Territory—Watson Lake

50-6684

Mid-tropospheric dry layers and their relationship to precipitation type in a sub-freezing troposphere.

Smith, G., *National weather digest,* Dec. 1995, 20(2), p.34-39, 8 refs.

Precipitation (meteorology), Classifications, Cloud physics, Synoptic meteorology, Ice vapor interface, Ice sublimation, Ice crystal growth, Humidity, Air temperature, Freezing points, Weather forecasting, Supercooled clouds

50-6685

Flow patterns conducive for heavy snow in the northern Big Horn Mountains of north central Wyoming.

Darrow, M.A., *National weather digest,* July 1995, 19(4), p.2-9, 3 refs.

Synoptic meteorology, Atmospheric circulation, Classifications, Wind direction, Snowfall, Weather forecasting, Atmospheric pressure, United States—Wyoming

50-6686

Contingent Valuation Method, Conjoint Analysis and other methods for valuation of encroachment on the environment—a literary survey. [Contingent Valuation Method, Conjoint Analysis och andra metoder för att beräkna miljöintrångskostnader—en litteraturöversikt]

Ivehammar, P., *Sweden. Väg-och transportforskningsinstitutet. (Road and Transport Research Instiute). VTI meddelande,* 1989, No.782, 112p., In Swedish with English summary. Refs. p.107-112.

Roads, Cold weather construction, Environmental impact, Environmental protection, Cost analysis, Bibliographies

50-6687

Studies of the biohydrochemical structure of the euphotic layer and primary production in the Bering Sea.

Sapozhnikov, V.V., Naletova, I.A., *Oceanology,* Mar.-Apr. 1995, 35(2), p.189-196, Translated from Okeanologiia. 24 refs.

Oceanography, Biomass, Distribution, Marine biology, Hydrogeochemistry, Plankton, Nutrient cycle, Photosynthesis, Sampling, Seasonal variations, Bering Sea

50-6688

Differentiation of Ob and Yenisei waters in the Kara Sea by alkalinity and silicate.

Stunzhas, P.A., *Oceanology,* Mar.-Apr. 1995, 35(2), p.197-201, Translated from Okeanologiia. 11 refs.

Oceanography, Oceanographic surveys, Hydrogeochemistry, Surface waters, Chemical properties, Estuaries, River flow, Sampling, Turbulent diffusion, Russia—Kara Sea

50-6689

Weddell-1 ice drift station in Antarctica.

Mel'nikov, I.A., *Oceanology,* Mar.-Apr. 1995, 35(2), p.286-288, Translated from Okeanologiia.

Oceanographic surveys, Hydrography, Ocean currents, Marine biology, Air ice water interaction, Atmospheric boundary layer, Drift stations, Research projects, Antarctica—Weddell Sea

The Russian-U.S. Weddell-1 Expedition carried out investigations in the western Weddell Sea from Feb. through June 1992. The main goal of the expedition was to investigate the physical-oceanographic, meteorological and biological processes and the interactions in the water-ice-atmosphere system in this poorly studied region of Antarctica. The expedition was organized jointly by several U.S. universities supported by the National Science Foundation and by the former USSR State Committee on Hydrometeorology and the USSR Academy of Sciences, financially supported by the USSR State Committee on Science and Technology. A distinctive feature of the expedition was that it conducted its investigations on the sea ice rather than on board a research vessel. This drifting research station was the first in the history of studying Antarctica. (Auth. mod.)

50-6690

Climate change and GCM simulation of water resources from mountain snowpack.

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River ice, River flow, Water level, Flow measurement, Profiles, Ice jams, Artificial ice, Simulation, Ice water interface, Ice cover thickness, Ice cover effect, Hydrodynamics

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SAR observations of arctic freeze-up compared to SSM/I during ARCTIC'91.
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Paleoclimatology, Quaternary deposits, Wind erosion, Wind direction, Wind factors, Rock properties, Surface structure, Abrasion, Eolian soils, Sweden, Denmark

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Paleomagnetic constraints on sedimentation rates in the eastern Arctic Ocean.
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Oceanography, Pleistocene, Oceanographic surveys, Magnetic surveys, Quaternary deposits, Bottom sediment, Sedimentation, Drill core analysis, Geomagnetism, Remanent magnetism, Stratigraphy, Radioactive age determination, Arctic Ocean

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50-6709
Comment on "Reflection of Scandinavia ice sheet fluctuations in Norwegian Sea sediments during the past 150,000 years" by Karl-Heinz Baumann, Klas S. Lackschewitz, Jan Mangerud, Robert F. Spielhagen, Thomas C. W. Wolf-Welling, Rüdiger Henrich, and Heidemarie Kassens.
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For pertinent paper see 49-4527.
Pleistocene, Marine geology, Ice sheets, Glacier oscillation, Ice rafting, Quaternary deposits, Marine deposits, Drill core analysis, Geochronology, Norwegian Sea

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Characteristics of the large-scale circulation during episodes with high and low concentrations of carbon dioxide and air pollutants at an arctic monitoring site in winter.
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Climatology, Polar atmospheres, Atmospheric boundary layer, Aerosols, Carbon dioxide, Air pollution, Atmospheric circulation, Wind direction, Wind factors, Atmospheric composition, Sampling, Origin, Environmental tests

50-6711
Initial snow chemistry survey of the Mogollon Rim in Arizona.
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Precipitation (meteorology), Snow surveys, Snow accumulation, Snow composition, Ion density (concentration), Sampling, Freeze drying, Statistical analysis, Impurities, United States—Arizona—Mogollon Rim

50-6712
Background stratospheric aerosol and polar stratospheric cloud reference models.
McCormick, M.P., Wang, P.H., Pitts, M.C., *Advances in space research,* 1996, 18(9/10), p.(9/10)155-(9/10)177, 19 refs.
Polar atmospheres, Climatology, Atmospheric composition, Polar stratospheric clouds, Cloud physics, Optical properties, Radiation balance, Attenuation, Solar radiation, Aerosols, Photometry, Profiles, Statistical analysis

A global aerosol climatology is evolving from the NASA satellite experiments SAM II, SAGE I, and SAGE II. In addition, polar stratospheric cloud (PSC) data have been obtained from these experiments over the last decade over both polar regions. This paper describes an updated reference model of the optical characteristics of the background aerosol and proposes a new aerosol reference model derived from the latest available data. The aerosol models are referenced to the height above the tropopause. The impact of a number of volcanic eruptions are described. In addition, a model describing the seasonal, longitudinal and interannual variations in PSCs will be presented. (Auth.)

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50-6714

Interpretation of extreme tree ring values in Switzerland based on climate records between 1525 and 1800 A.D. [Interpretation extremer Jahrringwerte in der Schweiz anhand von klima-historischen Aufzeichnungen zwischen 1525 und 1800 A.D.]

Vogel, R.B., Egger, H., Schweingruber, F.H., *Naturforschende Gesellschaft in Zürich. Vierteljahrsschrift,* June 1996, 141(2), p.65-76, In German with English summary. 39 refs.

Climatology, Climatic changes, Temperature variations, Age determination, Trees (plants), Plant tissues, Growth, Records (extremes), Correlation, Statistical analysis, Switzerland—Alps

50-6715

Modeling of an ice-on-coil thermal energy storage system.

Lee, A.H.W., Jones, J.W., *Energy conversion & management,* Oct. 1996, 37(10), p.1493-1507, 14 refs.

Heat recovery, Heat transfer, Cooling systems, Ice (water storage), Refrigeration, Storage tanks, Ice formation, Pipes (tubes), Ice melting, Ice solid interface, Ice volume, Cooling rate, Mathematical models, Heat transfer coefficient

50-6716

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50-6717

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Paleoclimatology, Pleistocene, Limnology, Hydrogeology, Climatic changes, Lacustrine deposits, Glacier melting, Meltwater, Water level, China—Qinghai, Lake

50-6719

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Piepenburg, D., Schmid, M.K., *Polar biology,* July 1996, 16(6), p.383-392, 36 refs.

Marine biology, Ecosystems, Ocean bottom, Biomass, Distribution, Sampling, Barents Sea

50-6720

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Marine biology, Ocean bottom, Bottom sediment, Biomass, Sampling, Ecosystems, Distribution, Statistical analysis, Barents Sea

50-6721

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Marine biology, Oceanographic surveys, Biomass, Plankton, Suspended sediments, Hydrography, Chlorophylls, Nutrient cycle, Sea ice distribution, Ice edge, Water temperature, Stratification, Profiles, Seasonal variations, Barents Sea

50-6722

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Marine biology, Ocean bottom, Ecosystems, Biomass, Sampling, Classifications, Statistical analysis, Barents Sea, Norway—Svalbard

50-6723

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Oceanography, Marine biology, Nutrient cycle, Sedimentation, Suspended sediments, Water chemistry, Geochemistry, Solid phases, Organic nuclei, Sampling, Statistical analysis, Barents Sea, Norway—Svalbard

50-6724

Effect of breakup of melting snowflakes on the resulting size distribution of raindrops.

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Precipitation (meteorology), Cloud physics, Snow physics, Falling snow, Phase transformations, Ice water interface, Snowflakes, Snow melting, Snow erosion, Mass transfer, Cloud droplets, Rain, Particle size distribution

50-6725

Elastic properties of dense H_2O-ices studied by Brillouin spectroscopy.

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Ice physics, Ice spectroscopy, High pressure tests, High pressure ice, Ice structure, Phase transformations, Molecular structure, Ice acoustics, Acoustic measurement, Velocity measurement, Elastic properties

50-6726

Study of proton dynamics in ice using an excited state proton transfer (ESPT) of a dopant molecule and its fluorescence.

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Ice physics, Doped ice, Ice crystal structure, Proton transport, Luminescence, Phase transformations, Spectra, Temperature effects

50-6727

Chemical composition of acid snowfall in northern part of Hokkaido.

Satoh, F., Sasa, K., Fujiwara, K., *Seppyo,* July 1996, 58(4), p.285-294, In Japanese with English summary. 19 refs.

Snowfall, Snow composition, Snow impurities, Atmospheric circulation, Air pollution, Scavenging, Japan—Hokkaido

50-6728

Consumption of nitrogen compound from snowpack by microbiological activity.

Suzuki, K., Watanabe, Y., *Seppyo,* July 1996, 58(4), p.295-301, In Japanese with English summary. 9 refs.

Snow composition, Snow hydrology, Snowmelt, Algae, Chlorophylls, Microbiology, Nutrient cycle

50-6729

Effect of snow cover on the heat and water balance of bare soil surface in north-western China.

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Snow hydrology, Snowmelt, Snow heat flux, Snow air interface, Snow cover effect, Soil air interface, Soil water, Heat balance, Water balance, Seepage, Evaporation, China—Altay Mountains

50-6730

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Avalanche modeling, Avalanche mechanics, Avalanche tracks, Slope processes, Mathematical models

50-6731

Review of dynamical studies on hydraulic transportation of snow.

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Snow removal equipment, Slush, Drains, Water pipelines, Pipe flow, Mathematical models

50-6732

Snow cover and climate in Japan.

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Snow cover distribution, Snow cover structure, Wet snow, Depth hoar, Snow air interface, Climatic factors, Japan

50-6733

Recent molecular dynamics simulation studies on ice: interatomic models of H_2O molecule, water, and ice.

Kawamura, K., *Seppyo,* July 1996, 58(4), p.339-342, In Japanese. 8 refs.

Ice crystal structure, Ice crystal growth, Hydrogen bonds, Water structure, Molecular structure, Molecular energy levels, Computerized simulation, Mathematical models

50-6734

More words on snow countermeasures for National Highway 17 (Part 2). [Kokudo 17-go yuki taisaku yowa (sono 2)]

Abe, T., *Seppyo,* July 1996, 58(4), p.352-358, In Japanese. 3 refs.

Avalanche engineering, Snow fences, Road maintenance, Japan

50-6735

Durability tests of soft rock under confining pressure. [Kosokuatsu shita no nanshitsugan no taikyusei shiken ni tsuite]

Ota, H., Hideshima, Y., Onodera, Y., *Hokkaido kaihatsukyoku gijutsu kenkyu happyokai happyo gaiyoshu (Hokkaido Development Bureau Technical Research Meeting. Presentation summaries),* 1994(Pub. Feb.95), 38(3), p.191-196, In Japanese. 6 refs.

Earth dams, Rock fills, Frozen ground strength, Frozen ground compression, Freeze thaw tests, Soil pressure, Soil strength

50-6736

Basic study on volcanic debris flows over snow slopes. [Setsumenjo ni okeru kasairyu ni kansuru kisoteki kenkyu]

Miura, A., Ide, Y., *Hokkaido kaihatsukyoku gijutsu kenkyu happyokai happyo gaiyoshu (Hokkaido Development Bureau Technical Research Meeting. Presentation summaries),* 1994(Pub. Feb.95), 38(3), p.215-220, In Japanese. 5 refs.

Volcanoes, Magma, Snow cover stability, Snow cover effect, Mudflows, Avalanche modeling, Avalanche triggering, Avalanche mechanics

50-6737

Low-temperature period countermeasures during concrete jacking of the Satsunaigawa Dam. [Satsunaigawa damu teitai konkurito dasetsu ni okeru teionki taisaku ni tsuite]

Yasunaka, S., Naka, H., Mizuno, H., *Hokkaido kaihatsukyoku gijutsu kenkyu happyokai happyo gaiyoshu (Hokkaido Development Bureau Technical Research Meeting. Presentation summaries),* 1994(Pub. Feb.95), 38(3), p.261-266, In Japanese.

Dams, Concrete structures, Winter concreting, Concrete strength, Thermal stresses, Thermal insulation, Frost protection, Japan—Hokkaido

50-6738

Stopping the water at the Toyohira Gorge Dam. [Toyohira-hazama damu teitai shisui koho ni tsuite]

Takada, K., Murasaki, H., Yamada, K., *Hokkaido kaihatsukyoku gijutsu kenkyu happyokai happyo gaiyoshu (Hokkaido Development Bureau Technical Research Meeting. Presentation summaries),* 1994(Pub. Feb.95), 38(3), p.267-270, In Japanese.

Dams, Leakage, Flow control, Ice control, Winter concreting, Grouting, Sealing, Cold weather operation, Japan—Hokkaido

50-6739

Acid precipitation in Hokkaido (Part 2). [Hokkaido no sansei kokabutsu ni tsuite (dai-2 ho)]

Tani, A., Yoshii, A., Satoh, N., *Hokkaido kaihatsukyoku gijutsu kenkyu happyokai happyo gaiyoshu (Hokkaido Development Bureau Technical Research Meeting. Presentation summaries),* 1994(Pub. Feb.95), 38(1), p.75-80, In Japanese. 1 ref.

Air pollution, Precipitation (meteorology), Snowfall, Snow impurities, Snow composition, Scavenging, Japan—Hokkaido

50-6740

Tests on snowplows (continuation)—tests on improving the performance of snowplows. [Josetsu kikai ni kansuru chosa shiken (keizoku)—josetsu kikai kikai no seino kojo ni kansuru chosa shiken]

Hokkaido Development Bureau, *Hokkaido kaihatsukyoku gijutsu kenkyu happyokai happyo gaiyoshu (Hokkaido Development Bureau Technical Research Meeting. Presentation summaries),* 1994(Pub. Feb.95), 38(1), p.279-294, In Japanese.

Snow removal equipment, Motor vehicles, Road maintenance, Cold weather tests

50-6741

Tests on a road snow removal information system—development of mobile instrumented road information vehicles (Part 2). [Doro josetsu joho shisutemu ni kansuru shiken—ido keisoku-shiki johosha no kaihatsu (dai-2 ho)]

Harada, N., Takashiba, Y., *Hokkaido kaihatsukyoku gijutsu kenkyu happyokai happyo gaiyoshu (Hokkaido Development Bureau Technical Research Meeting. Presentation summaries),* 1994(Pub. Feb.95), 38(1), p.319-326, In Japanese.

Road icing, Snow removal, Road maintenance, Motor vehicles, Safety, Weather forecasting

50-6742

Antarctic muon and neutrino detector AMANDA: first data and outlook.

Lynch, J., et al, Astronomical Society of the Pacific, Conference Series, Vol.79. Robotic telescopes: current capabilities, present developments, and future prospects for automated astronomy. Proceedings of a symposium held as part of the 106th Annual Meeting of the Astronomical Society of the Pacific, Flagstaff, AZ, 28-30 June 1994. Edited by G.W. Henry and J.A. Eaton, San Francisco, CA, USA, Astronomical Society of the Pacific, 1995, p.205-220, 20 refs. DLC QB88.R615 1995

Ice optics, Light scattering, Radiation absorption, Radiation measuring instruments, Antarctica—Amundsen-Scott Station

The first results are reported of the AMANDA detector (4 strings, 80 optical modules) deployed in South Pole ice at a depth of 800-1000 m during the antarctic summer, 1993-94. Details of the findings are reported here along with projected improvements in sensor placements and sensitivities. (Auth. mod.)

50-6743

Photoviscoelastic modeling of the creep of frozen soil.

Zhao, X.S., Wang, T.D., Wu, J.J., Wu, Z.W., Liu, Y.Z., *Progress in natural science,* Aug. 1996, 6(4), p.465-471, 6 refs.

Frozen ground mechanics, Soil tests, Frozen ground compression, Stress concentration, Loading, Soil creep, Rheology, Viscoelasticity, Mathematical models, Simulation

50-6744

Ottawa firm makes wastewater 'white as snow'.

Kneisel, S., *Canadian consulting engineer,* July-Aug. 1996, p.18-19.

Waste disposal, Waste treatment, Water treatment, Hydraulic jets, Ice formation, Ice sublimation, Aerosols, Artificial snow, Environmental protection

50-6745

Survival and regeneration of dormant silver birch buds stored at super-low temperatures.

Ryynänen, L., *Canadian journal of forest research,* Apr. 1996, 26(4), p.617-623, With French summary. 18 refs.

Forestry, Trees (plants), Cold storage, Cryobiology, Plant physiology, Survival, Viability, Growth, Freeze thaw tests, Temperature effects, Low temperature tests

50-6746

Stomate and pollen content of lake surface sediments from across the tree line on the Taimyr Peninsula, Siberia.

Clayden, S.L., Cwynar, L.C., MacDonald, G.M., *Canadian journal of botany,* July 1996, 74(7), p.1009-1015, With French summary. 18 refs.

Paleoecology, Palynology, Limnology, Forest lines, Lacustrine deposits, Sediments, Forest tundra, Tundra vegetation, Tundra terrain, Vegetation patterns, Sampling, Statistical analysis, Revegetation, Russia—Siberia

50-6747

Comparative study of the effects of the root endophytes *Leptotontidium orchidicola* and *Phialocephala fortini* (Fungi Imperfecti) on the growth of some subalpine plants in culture.

Fernando, A.A., Currah, R.S., *Canadian journal of botany,* July 1996, 74(7), p.1071-1078, With French summary. 25 refs.

Plants (botany), Plant ecology, Alpine landscapes, Roots, Soil microbiology, Nutrient cycle, Growth, Fungi, Simulation

50-6748

Ecophysiology of a snow-bed bryophyte *Kiaeria starkei* during snowmelt and uptake of nitrate from meltwater.

Woolgrove, C.E., Woodin, S.J., *Canadian journal of botany,* July 1996, 74(7), p.1095-1103, With French summary. 54 refs.

Climatology, Air pollution, Snow impurities, Plant ecology, Plant physiology, Photosynthesis, Mosses, Snowmelt, Sampling, Ion density (concentration), Nutrient cycle, Snow cover effect, Environmental impact

50-6749

Effects of cyclic freezing and thawing on volume changes and permeabilities of soft fine-grained soils.

Eigenbrod, K.D., *Canadian geotechnical journal,* Aug. 1996, 33(4), p.529-537, With French summary. 17 refs.

Frozen ground mechanics, Geocryology, Clay soils, Volume, Water content, Freeze thaw cycles, Freeze thaw tests, Frozen ground compression, Permeability, Freezing rate, Frozen ground strength, Thaw consolidation, Statistical analysis

50-6750

Evidence for recent groundwater flow through Late Wisconsinan till near Toronto, Ontario.

Gerber, R.E., Howard, K.W.F., *Canadian geotechnical journal,* Aug. 1996, 33(4), p.538-555, With French summary. 70 refs.

Glacial geology, Glacial deposits, Moraines, Hydrogeology, Permeability, Quaternary deposits, Ground water, Water transport, Subsurface drainage, Drilling fluids, Drill core analysis, Sampling, Geochemistry, Isotope analysis

50-6751

On the estimation of frost loads.

Rajani, B., Zhan, C., *Canadian geotechnical journal,* Aug. 1996, 33(4), p.629-641, With French summary. 27 refs.

Frozen ground mechanics, Water pipelines, Dislocations (materials), Settlement (structural), Loads (forces), Frost penetration, Frost heave, Trenching, Earth fills, Stress concentration, Thermal regime, Mathematical models, Frost forecasting

50-6752

Effect of fines content on frost heave.

Tester, R.E., Gaskin, P.N., *Canadian geotechnical journal,* Aug. 1996, 33(4), p.678-680, With French summary. 7 refs.

Frozen ground mechanics, Freeze thaw tests, Pavement bases, Subgrade soils, Frost heave, Soil composition, Soil texture, Fines, Frozen ground strength, Bearing strength, Frost resistance

50-6753

Production losses due to a summer frost in a *Salix viminalis* short-rotation forest in southern Sweden.

Verwijst, T., Elowson, S., Li, X.M., Leng, G.Y., *Scandinavian journal of forest research,* 1996, 11(2), p.104-110, 23 refs.

Forestry, Plant tissues, Cold weather survival, Agriculture, Radiant cooling, Frost resistance, Damage, Growth, Biomass, Topographic effects, Forest strips, Sampling

50-6754

Daily courses of photosynthesis and assimilates export and storage in the leaves of *Thymus subarcticus* under cold climatic conditions.

Siutkina, A.V., Gamaleĭ, IU.V., *Russian journal of plant physiology,* May-June 1996, 43(3), p.305-312, Translated from Fiziologiia rastenii. 18 refs.

Plant ecology, Plant physiology, Photosynthesis, Growth, Grasses, Cold weather survival, Plant tissues, Scanning electron microscopy, Microstructure, Diurnal variations, Temperature effects

50-6755

Cold acclimation of the photosynthetic apparatus in an arctic species, *Oxyria digyna.*

Koroleva, O.IA., *Russian journal of plant physiology,* May-June 1996, 43(3), p.319-324, Translated from Fiziologiia rastenii. 18 refs.

Plant physiology, Grasses, Acclimatization, Photosynthesis, Cold weather tests, Temperature effects, Chlorophylls, Luminescence, Radiation absorption, Photochemical reactions

50-6756

Chloroplast structure in northern plants in relation to chloroplast adaptation to arctic conditions.

Miroslavov, E.A., Voznesenskaia, E.V., Bubolo, L.S., *Russian journal of plant physiology,* May-June 1996, 43(3), p.325-330, Translated from Fiziologia rastenii. 15 refs.

Plant physiology, Cold weather survival, Acclimatization, Chlorophylls, Plant tissues, Photosynthesis, Scanning electron microscopy, Microstructure, Structural analysis

50-6757

CO_2 exchange in some vascular plants inhabiting the polar Urals.

Gerasimenko, T.V., Kaipiainen, E.L., Filatova, N.I., Chupakhina, N.I., *Russian journal of plant physiology,* May-June 1996, 43(3), p.331-341, Translated from Fiziologiia rastenii. 23 refs.

Plant physiology, Photosynthesis, Acclimatization, Vapor transfer, Carbon dioxide, Tundra vegetation, Grasses, Photochemical reactions, Light effects, Temperature effects, Russia—Ural Mountains

50-6758

Modeling the influence of ice on sea level variations in the Baltic Sea.

Zhang, Z.H., Leppäranta, M., *Geophysica,* 1995, 31(2), p.31-45, 15 refs.

Oceanography, Sea level, Spectra, Wind factors, Turbulent boundary layer, Air ice water interaction, Ice cover effect, Internal friction, Mathematical models, Ice conditions, Baltic Sea

50-6759

Premelting of ice in porous silica glass.

Ishizaki, T., Maruyama, M., Furukawa, Y., Dash, J.G., *Journal of crystal growth,* June 1996, 163(4), p.455-460, 14 refs.

Ice physics, Porous materials, Ice melting, Ice solid interface, Melting points, Water films, Thickness, Unfrozen water content, Thermodynamics, Nuclear magnetic resonance, Temperature effects

50-6760

Ultrasonic measurement of convective heat transfer coefficients on a nonuniform melt layer.

Bhansali, A.P., Black, W.Z., Jarzynski, J., *Review of scientific instruments,* Apr. 1996, 67(4), p.1577-1585, 45 refs.

Ice physics, Ice acoustics, Acoustic measurement, Ultrasonic tests, Ice heat flux, Convection, Ice melting, Heat transfer coefficient, Ice water interface, Ice cover thickness

50-6761

Penetrative convection induced by the freezing of seawater.

Hadji, L., Jin, X.X., *International journal of heat and mass transfer,* Dec. 1996, 39(18), p.3823-3834, 20 refs.

Oceanography, Sea water freezing, Ice water interface, Heat transfer, Ice heat flux, Thermal conductivity, Convection, Thermal diffusion, Salinity, Supercooling, Phase transformations, Mathematical models

50-6762

Influences of initial concentration and supercooling degree on the permeability of a porous medium saturated with partially solidified aqueous solution.

Okada, M., Matsumoto, K., Fukuzaki, M., *International journal of heat and mass transfer,* Dec. 1996, 39(18), p.3845-3853, 11 refs.

Porous materials, Solutions, Salt water, Supercooling, Liquid cooling, Liquid phases, Phase transformations, Permeability, Heat transfer, Freezing points, Solidification, Ice formation, Simulation

50-6763

Proceedings. [Zhongguo diyijie Nandayang kaocha xueshu taolunhui lunwen zhuanji]

China Symposium on Southern Ocean Expedition, 1st, Hangzhou, May, 1988, Nanji kexue kaocha lunwenji (Collected papers on antarctic expeditions, No.6), Shanghai, Kexue jishu chubanshe (Shanghai Science and Technology Publisher), 1989, 444p., In Chinese with English summaries, titles, and table of contents. Refs. passim. For individual papers see A-55743, B-55725 through B-55742, B-55744, B-55745, B-55761, E-55717 through E-55721, E-55746 through E-55756, E-55758, F-55714, I-55711 through I-55713, I-55760, J-55706 through J-55710, J-55715, J-55716, J-55722 through J-55724, J-55757, L-55759 or 50-6764 through 50-6786.

DLC G845.5.C45 1989 Orien China

Oceanographic surveys, Marine atmospheres, Atmospheric circulation, Marine biology, Marine geology, Marine deposits, Glacial deposits, Bottom sediment

This is a collection of papers based on data obtained during the First Chinese Southern Ocean Expedition in the summer of 1984-1985. The 56 studies reported in this volume were carried out in different antarctic regions, marine and continental, and in different disciplines including biology, geology, oceanography, meteorology, terrestrial physics and glaciology.

50-6764

Water masses and circulation around the South Shetland Islands in summer.

Yang, T.Z., Zhao, J.S., Xu, J.P., Zhongguo diyijie Nandayang kaocha xueshu taolunhui lunwen zhuanji (China Symposium on Southern Ocean Expedition, 1st, Hangzhou, May, 1988. Proceedings), Shanghai, Kexue jishu chubanshe (Shanghai Science and Technology Publisher), 1989, p.1-13, In Chinese with English summary. 13 refs.

DLC G845.5.C45 1989 Orien China

Oceanographic surveys, Ocean currents, Water transport, Water temperature, Salinity, Antarctica—South Shetland Islands, Antarctica—Bellingshausen Sea, Antarctica—Bransfield Strait

The hydrographic data presented were obtained during the First Chinese Southern Ocean Expedition in summer 1984-85; the water masses and circulation of waters adjacent to the South Shetland Is. are described. Results show that the waters in the Bellingshausen Sea consist of Antarctic Summer Surface Water, Antarctic Winter Water, Antarctic Circumpolar Deep Water and Antarctic Bottom Water. In the Bransfield Strait, the horizontal distribution of water masses can be roughly divided into the northern Bransfield Strait waters (Brs), the southern Bransfield Strait waters (Brw) and the Bransfield Strait central waters (Brc). Brs originates mainly from the surface water of the Bellingshausen Sea, whereas Brw is dominated by Weddell Sea water. Brc, which is a cold water mass with high salinity, is found mainly in the deep and bottom layers of the Strait. (Auth. mod.)

50-6765

Sketch of hydrographic structure and circulation in the waters near Wilkes Land, Antarctica.

Miao, Y.T., Yu, H.H., Zhongguo diyijie Nandayang kaocha xueshu taolunhui lunwen zhuanji (China Symposium on Southern Ocean Expedition, 1st, Hangzhou, May, 1988. Proceedings), Shanghai, Kexue jishu chubanshe (Shanghai Science and Technology Publisher), 1989, p.26-35, In Chinese with English summary. 6 refs.

DLC G845.5.C45 1989 Orien China

Oceanographic surveys, Ocean currents, Water transport, Water temperature, Salinity, Antarctica—Wilkes Land, —Indian Ocean

Oceanographic observations carried out in waters off Wilkes Land in the summer of 1985 revealed a deep-water area, a sharp continental slope, and a shallow continental-shelf area. All surface temperatures were found to be lowest in the southern portion of the surveyed area; surface salinity was low due to melted ice; and the oxygen content was high in the upper layer. The vertical structure of temperature and salinity is divided into 5 types: the upper homogenous layer, with high temperature and low salinity; seasonal thermohaline; winter residual water layer, with the lowest temperature readings; transient water layer, in which salinity and temperature increase with depth; and the bottom layer, with variable temperature and salinity values. Two current systems were observed: the Antarctic Circumpolar Current in the northern sector and a westward current in the southern portion of the surveyed area.

50-6766

Characteristics of fine structures at some CTD stations during the First Chinese Southern Ocean Expedition.

Fang, X.H., Zhang, Y.L., He, J.F., Zhongguo diyijie Nandayang kaocha xueshu taolunhui lunwen zhuanji (China Symposium on Southern Ocean Expedition, 1st, Hangzhou, May, 1988. Proceedings), Shanghai, Kexue jishu chubanshe (Shanghai Science and Technology Publisher), 1989, p.36-41, In Chinese with English summary. 8 refs.

DLC G845.5.C45 1989 Orien China

Oceanographic surveys, Water temperature, Salinity, Water transport, Water waves

Analysis of data collected during the First Chinese Southern Ocean Expedition shows small variability in water temperature, salinity and density in the surveyed area. Various types of fine structures caused by different processes, such as melting of surface ice, increase in temperature, wind occurrence, entrainment, bidiffusion or sinking due to mixing, all of them irreversible, were observed. The spectrum of vertical wave number for the temperature gradient shows, at all depths, a reversible fine structure caused by internal waves. (Auth. mod.)

50-6767

Relation between distribution of phytoplankton and sea water stability.

Su, Y.F., Zhongguo diyijie Nandayang kaocha xueshu taolunhui lunwen zhuanji (China Symposium on Southern Ocean Expedition, 1st, Hangzhou, May, 1988. Proceedings), Shanghai, Kexue jishu chubanshe (Shanghai Science and Technology Publisher), 1989, p.42-48, In Chinese with English summary. 2 refs.

DLC G845.5.C45 1989 Orien China

Oceanographic surveys, Water temperature, Salinity, Marine biology, Biogeography, Plankton, Biomass, Nutrient cycle

The water stability in the southern ocean, showing a stratification phenomenon in the structure of the water masses, is discussed. Understanding the distribution of the layer with maximal stability associated with the water masses, which represents a barrier restricting eddy diffusion and homogenization of hydrographic properties, was found helpful in the study of phytoplankton distribution. This is considered to be an important factor in the exploitation of marine biological resources.

50-6768

Analysis for major weather features at the Great Wall Station of China in summer, Antarctica.

Jiang, D.Z., Wang, D.C., Zhongguo diyijie Nandayang kaocha xueshu taolunhui lunwen zhuanji (China Symposium on Southern Ocean Expedition, 1st, Hangzhou, May, 1988. Proceedings), Shanghai, Kexue jishu chubanshe (Shanghai Science and Technology Publisher), 1989, p.49-53, In Chinese with English summary. 2 refs.

DLC G845.5.C45 1989 Orien China

Marine atmospheres, Weather stations, Weather observations, Meteorological data, Antarctica—Great Wall Station

Results of weather observations at the Great Wall Station, and the analysis of meteorological data obtained during Chinese antarctic research expeditions, are presented. Two different types of weather patterns concerning snow, rain and strong winds, and the physical factors causing them, are discussed.

50-6769

Preliminary analysis of the cyclone activity over the Antarctic Peninsula in summer.

Wang, D.C., Jiang, D.Z., Zhongguo diyijie Nandayang kaocha xueshu taolunhui lunwen zhuanji (China Symposium on Southern Ocean Expedition, 1st, Hangzhou, May, 1988. Proceedings), Shanghai, Kexue jishu chubanshe (Shanghai Science and Technology Publisher), 1989, p.54-57, In Chinese with English summary. 3 refs.

DLC G845.5.C45 1989 Orien China

Polar atmospheres, Marine atmospheres, Atmospheric circulation, Atmospheric pressure, Atmospheric disturbances, Antarctica—Antarctic Peninsula

Analysis of cyclone activity based on meteorological data obtained from Dec. 1986 to Mar. 1987 on the Antarctic Peninsula shows that the track and strength of the cyclones are closely related to changes of the subtropical high and the antarctic cold high. A cyclone is obstructed and moves southeast when a subtropical high stretches south. Cyclones occurring south of the Great Wall Station result in strong northwesterly wind and rainfall. The cyclone track stretches north when a pronounced antarctic cold high occurs over the Antarctic Peninsula. Cyclones occurring north of the station result in strong easterly wind and snowfall.

50-6770

Case analysis of antarctic strong cyclone process.
Luo, Y.J., Wang, B.G., Zhongguo diyijie Nandayang kaocha xueshu taolunhui lunwen zhuanji (China Symposium on Southern Ocean Expedition, 1st, Hangzhou, May, 1988. Proceedings), Shanghai, Kexue jishu chubanshe (Shanghai Science and Technology Publisher), 1989, p.58-61, In Chinese with English summary.
DLC G845.5.C45 1989 Orien China
Polar atmospheres, Marine atmospheres, Atmospheric circulation, Atmospheric pressure, Atmospheric disturbances, Storms, —South Pacific Ocean
During the Jan. 1985 South Pacific cruise of the ship *Xiangyanghong 10*, a cyclone was observed between Jan. 23 and 27, showing maximum wind speed of about 34 m/s and creating 12 m-high waves. It is suggested that the strengthening of the subtropical high, and the formation of blocking anticyclones, created a favorable condition for two cyclones to merge into one.

50-6771

Evidence from an ice core: the alternation of cold and warm summer during the past 150 years at the top area of the Law Dome ice cap, East Antarctica.
Han, J.K., Zhongguo diyijie Nandayang kaocha xueshu taolunhui lunwen zhuanji (China Symposium on Southern Ocean Expedition, 1st, Hangzhou, May, 1988. Proceedings), Shanghai, Kexue jishu chubanshe (Shanghai Science and Technology Publisher), 1989, p.62-68, In Chinese with English summary. 7 refs.
DLC G845.5.C45 1989 Orien China
Ice cores, Firn stratification, Ice dating, Ice temperature, Air temperature, Climatic changes, Paleoclimatology, Antarctica—Law Dome
Stratigraphic analyses of a firn/ice core more than 60 m long, drilled at the top of Law Dome, show that no infiltration ice layer resulting from melt events exists below 33 m. The regelation ice layers formed under weaker ablation conditions decrease with increasing depth; groups of infiltration ice layers appear within a 10 m interval above 33 m; the indicated periods between the neighbouring groups are 22, 26 and 21 years. Infiltration ice occurs twice in each group about 2 m apart, which is equal to the thickness of annual snow accumulation during 5 summers. It is concluded that the summer season at the top of Law Dome has undergone a transitional change from cold to warm in the last 150 years, exhibiting a periodic fluctuation of 22-23 years. (Auth. mod.)

50-6772

Study of chemical characteristics of water masses in the Bransfield Strait and its adjacent areas.
Wang, Y.H., Dong, H.L., Xu, H.L., Zhongguo diyijie Nandayang kaocha xueshu taolunhui lunwen zhuanji (China Symposium on Southern Ocean Expedition, 1st, Hangzhou, May, 1988. Proceedings), Shanghai, Kexue jishu chubanshe (Shanghai Science and Technology Publisher), 1989, p.69-74, In Chinese with English summary. 4 refs.
DLC G845.5.C45 1989 Orien China
Oceanographic surveys, Sea water, Water temperature, Salinity, Water chemistry, Antarctica—Bransfield Strait
Based on data collected in Bransfield Strait during the first Chinese antarctic expedition, the chemical characteristics of different water masses are discussed. Results show that the Si/S ratio is important for current identification; the water N/P content was found to range from 17 to 11. The water vertical structure, chemical characteristics and the typical depths of different water masses were determined by T-O_2 and AUO-P diagram curves. Causes of the formation of different water masses and differences in their chemical elements are discussed. (Auth. mod.)

50-6773

Distribution, regeneration and cycle of nutrients in the Bransfield Strait and its adjacent areas.
Wang, Y.H., Dong, H.L., Xu, H.L., Zhongguo diyijie Nandayang kaocha xueshu taolunhui lunwen zhuanji (China Symposium on Southern Ocean Expedition, 1st, Hangzhou, May, 1988. Proceedings), Shanghai, Kexue jishu chubanshe (Shanghai Science and Technology Publisher), 1989, p.75-80, In Chinese with English summary. 5 refs.
DLC G845.5.C45 1989 Orien China
Oceanographic surveys, Sea water, Water chemistry, Marine biology, Nutrient cycle, Biomass, Antarctica—Bransfield Strait
Analysis of data collected in the Bransfield Strait during the first Chinese antarctic expedition shows that the nutrient values are higher along the coast and decrease gradually seaward. The vertical distribution of nutrients reflects obvious spring layers. The regeneration of nutrients begins within these layers and extends to the bottom, at the continental shelf, and down to 500 m offshore. The maximum content of phosphate occurs at 300 m depth. The cycle of nutrients is completed through the convection of sea water during winter and by upwelling. These areas, rich in nutrients, show very high phytoplankton content. (Auth. mod.)

50-6774

Behavior of mercury in seawater to the northwest of the Antarctic Peninsula.

Ruan, Z., Zhongguo diyijie Nandayang kaocha xueshu taolunhui lunwen zhuanji (China Symposium on Southern Ocean Expedition, 1st, Hangzhou, May, 1988. Proceedings), Shanghai, Kexue jishu chubanshe (Shanghai Science and Technology Publisher), 1989, p.119-125, In Chinese with English summary. 12 refs.

DLC G845.5.C45 1989 Orien China

Oceanographic surveys, Sea water, Water chemistry, Water pollution, Marine atmospheres, Air pollution, Air water interactions, Antarctica—Bransfield Strait

Studies on concentrations of total mercury and inorganic mercury in waters to the northwest of the Antarctic Peninsula are presented. The changes of mercury in horizontal and vertical directions and the relations between concentration of mercury and nutrients are discussed. Mercury and phosphate are linearly related by the expression: total mercury (ng/L)=2.98 PO_4 -P(μg/L)-1.29 (r=0.89); organic mercury (ng/L)=3.37 PO_4 -Pu(μg/L)-3.95 (r=0.75); and inorganic mercury (ng/L)=1.47 PO_4 (μg/L)-0.79 (r=0.70). The effect of high concentrations of atmospheric mercury over the water is described. (Auth. mod.)

50-6775

Sea-air exchange of sulfur, phosphorus, and nitrogen in marine aerosols over the Antarctic Peninsula waters.

Chen, L.Q., Yang, X.L., Huang, J.H., Zhongguo diyijie Nandayang kaocha xueshu taolunhui lunwen zhuanji (China Symposium on Southern Ocean Expedition, 1st, Hangzhou, May, 1988. Proceedings), Shanghai, Kexue jishu chubanshe (Shanghai Science and Technology Publisher), 1989, p.126-132, In Chinese with English summary. 16 refs.

DLC G845.5.C45 1989 Orien China

Marine atmospheres, Atmospheric composition, Atmospheric circulation, Aerosols, Air water interactions, Sea water, Water chemistry, Antarctica—Antarctic Peninsula, —South Pacific Ocean

Results of studies of marine aerosols collected from the Pacific Ocean and the Antarctic Peninsula atmosphere show that the mean Na/Mg^{++} ratio of the aerosols is 8.5, close to the mean ratio of sea water, 8.6. Contents of sulfur, phosphorus and nitrogen in marine aerosols over the waters off the Antarctic Peninsula are controlled by natural processes such as sea-air exchange, biosphere-atmosphere exchange, weathering-atmosphere transport, or photochemical reactions. Non-seasalt sulfate (nss SO_4^{2-}) in the Antarctic Peninsula atmosphere can be traced to dimethylsulfide (DMS) caused by marine organism activity. The concentrations of water-soluble phosphorus are highest in the Antarctic Peninsula aerosols. Organic phosphorus shows a significant correlation with Na, suggesting that most of the organic P in marine aerosols comes from sea water.

50-6776

Analysis of DDT, DDE and PCBs in the blood of *Pygoscelis* of Antarctica.

Yang, H.F., Zhu, J.F., Wu, Y.L., Zhongguo diyijie Nandayang kaocha xueshu taolunhui lunwen zhuanji (China Symposium on Southern Ocean Expedition, 1st, Hangzhou, May, 1988. Proceedings), Shanghai, Kexue jishu chubanshe (Shanghai Science and Technology Publisher), 1989, p.133-135, In Chinese with English summary. 12 refs.

DLC G845.5.C45 1989 Orien China

Polar atmospheres, Marine atmospheres, Atmospheric circulation, Atmospheric composition, Air pollution, Physiological effects, Marine biology

The blood of Gentoo penguins and chinstrap penguins was analyzed by gas chromatography for organochlorine pesticides (DDT, DDE) and polychlorinated biphenyls (PCBs) during the first Chinese antarctic expedition. The results show that the concentrations of P, P^1-DDT, P, P^1-DDE and PCBs are 13.45 ng/g, 0.618 ng/g and 0.047 ng/g, respectively, in the blood of Gentoo penguins and the concentrations of P, P^1-DDT and P P^1-DDE are, respectively, 1.95 ng/g and 0.195 ng/g in the blood of chinstrap penguins. Levels of PCBs are related to the distance from the polluted sources. (Auth. mod.)

50-6777

Study of adaptability of Calanoida copepod to temperature and salinity: *Drepanopus bispinosus* in Burton Lake, Antarctica.

Wang, Z.P., Lin, B.K., Cao, Y.H., Zhongguo diyijie Nandayang kaocha xueshu taolunhui lunwen zhuanji (China Symposium on Southern Ocean Expedition, 1st, Hangzhou, May, 1988. Proceedings), Shanghai, Kexue jishu chubanshe (Shanghai Science and Technology Publisher), 1989, p.240-246, In Chinese with English summary. 12 refs.

DLC G845.5.C45 1989 Orien China

Salt lakes, Limnology, Ecology, Cryobiology, Acclimatization, Cold tolerance, Antarctica—Vestfold Hills

The tolerance to temperature and salinity of Burton Lake, Vestfold Hills, by *Drepanopus bispinosus* (Copepoda, Calanoida) was studied during different seasons. Results show that the copepod has marked physiological properties conducive to tolerance of low temperature and high salinity, especially after the winter season. These physiological features are attributed to natural acclimatization. The experimental data was processed by computer. The correlations of the animals' survival rate with the change of temperature and salinity are discussed and shown in tables and graphs.

50-6778

Effect of salinity on oxygen metabolism of copepod *Drepanopus bispinosus* in Burton Lake in the littoral of Antarctica.

Wang, Z.P., Zhongguo diyijie Nandayang kaocha xueshu taolunhui lunwen zhuanji (China Symposium on Southern Ocean Expedition, 1st, Hangzhou, May, 1988. Proceedings), Shanghai, Kexue jishu chubanshe (Shanghai Science and Technology Publisher), 1989, p.247-252, In Chinese with English summary. 12 refs.

DLC G845.5.C45 1989 Orien China

Salt lakes, Limnology, Physiological effects, Ecology, Cryobiology, Acclimatization, Antarctica—Vestfold Hills

Oxygen consumption values of the copepod *Drepanopus bispinosus* from Burton Lake were determined under different salinity conditions. Results show that salinity has a significant effect on animal oxygen metabolism: the oxygen consumption increased markedly in diluted sea water. Respiration rates under normal salinity and reduced salinity are discussed. The percentage of increased respiration rate under higher salinity conditions was 28.5%, which was less than that in lower salinity (53%). It is suggested that the features of the copepod's oxygen consumption correspond to their physiological characteristics, attributed to the copepod's higher tolerance of high salinity than low salinity conditions.

50-6779

Radiolaria biostratigraphy of core S_{11} in the area northwest of Antarctic Peninsula.

Chen, W.B., Zhongguo diyijie Nandayang kaocha xueshu taolunhui lunwen zhuanji (China Symposium on Southern Ocean Expedition, 1st, Hangzhou, May, 1988. Proceedings), Shanghai, Kexue jishu chubanshe (Shanghai Science and Technology Publisher), 1989, p.313-321, In Chinese with English summary. 11 refs.

DLC G845.5.C45 1989 Orien China

Marine deposits, Bottom sediment, Drill core analysis, Marine biology, Fossils, Paleoecology, Paleoclimatology, Stratigraphy, Antarctica—South Shetland Islands

Samples of a core 3.41 m long collected from the upper continental rise northwest of the Antarctic Peninsula were used in the study of radiolarian biostratigraphy. Radiolarians were found in all 61 samples and 140 species were identified. According to the relative abundance fluctuation of the species of the *Cyclodophora davisiana* (Ehr.), the oldest sediments of the core are assigned to 30,000 B.P., with the age at the interval of 240 cm of 18,000 B.P. (18K). The boundary between the Holocene and the Late Pleistocene is at 140 cm with an age of 14,000 B.P. Based on the ratio of the antarctic *Spongotrochus glacialis* and *Lithelius nautiloides* to the subantarctic *Lithamphora furcaspiculata* and *Theocalyptra bicornis*, the surface water temperature during the Holocene is estimated at about 5°C, and the surface water temperature during the Late Pleistocene is estimated near 0°C. (Auth.)

50-6780

Diatom distribution of core S_{11} and paleoclimate variation in the northwestern sea area of the Antarctic Peninsula.

Zhan, Y.F., Zhongguo diyijie Nandayang kaocha xueshu taolunhui lunwen zhuanji (China Symposium on Southern Ocean Expedition, 1st, Hangzhou, May, 1988. Proceedings), Shanghai, Kexue jishu chubanshe (Shanghai Science and Technology Publisher), 1989, p.322-328, In Chinese with English summary. 5 refs.

DLC G845.5.C45 1989 Orien China

Marine deposits, Bottom sediment, Drill core analysis, Marine biology, Fossils, Paleoecology, Paleoclimatology, Stratigraphy, Antarctica—South Shetland Islands

For the study of diatoms, 32 samples of a core collected off the Antarctic Peninsula were analyzed and 57 species were identified. Based on the variation of diatom abundance and species dominance, they are divided into 5 assemblages: *Nitzschia kerguelensis-Cosinodiscus lentiginosus* (0-10 cm); *N. kerguelensis-Cos. lentiginosus-Eucampia balaustium* (10-80 cm); *Cos. lentiginosus-E. balaustium* (80-125 cm); *Cos. lentiginosus-E. balaustium-Charcotia actinochilus* (125-250 cm); and *Charcotia actinochilus-Cos. lentiginosus* (250-341 cm). Paleoclimatic variations are discussed. Results of the temperature curve of warm species to cold species *(kerguelensis/actinochilus)*, compared with the curve of oxygen isotopes, calcium carbonate and Radiolaria, show that the later sedimentation stage (0-125 cm) corresponds to a warm stage. The earlier sedimentation stage (125-341 cm) corresponds to a cold stage; and the turning point (240 cm) corresponds to the last glacial maximum. (Auth.)

50-6781

Clay deposited in ice-water from the sea area around the South Shetland Islands.

Zhou, F.G., Feng, C.Y., Lu, W., Wu, L.H., Zhang, Z.X., Zhongguo diyijie Nandayang kaocha xueshu taolunhui lunwen zhuanji (China Symposium on Southern Ocean Expedition, 1st, Hangzhou, May, 1988. Proceedings), Shanghai, Kexue jishu chubanshe (Shanghai Science and Technology Publisher), 1989, p.329-339, In Chinese with English summary. 8 refs.

DLC G845.5.C45 1989 Orien China

Marine geology, Marine deposits, Bottom sediment, Glacial deposits, Ice rafting, Sediment transport, Soil composition, Clay minerals, Antarctica—South Shetland Islands

Data on marine sediments, obtained during investigations carried out around the South Shetland Is. in 1985, show that the sediments consist of sand, silt with fine gravel, gravel and clay. Five clay-mineral assemblages show that montmorillonite, altered from basic volcanic rock and having good crystal form, occupies the first place; altered chlorite from basic rock and altered illite, as well as kaolinite from the intermediate-acid rock, come second. It is suggested that the deposition processes in this area are contolled by terrigeneous supply, ice rafting and ice-water environment. (Auth. mod.)

50-6782

Sedimentary model and dynamic process of the Great Wall Bay coast, Antarctica.

Wang, X.L., Zhongguo diyijie Nandayang kaocha xueshu taolunhui lunwen zhuanji (China Symposium on Southern Ocean Expedition, 1st, Hangzhou, May, 1988. Proceedings), Shanghai, Kexue jishu chubanshe (Shanghai Science and Technology Publisher), 1989, p.340-345, In Chinese with English summary. 6 refs.

DLC G845.5.C45 1989 Orien China

Marine geology, Marine deposits, Bottom sediment, Sediment transport, Shore erosion, Shoreline modification, Antarctica—Great Wall Station

The coastal sediments of the Great Wall Bay change rapidly with changing topography and environmental dynamics. They are identified as 6 facies-belts, from high-water level to the subtidal zone: the backshore-silt belt; the shore-gravel bar, or storm-ridge belt; the foreshore gravel-sand belt; the foreshore sand-gravel bank belt; the offshore sand belt; and the offshore silt belt. These facies-belts occur mostly on the southeast coast of King George I. Several ancient gravel bars, or storm ridges developed along the coast about 200-500 B. P., are suggested as evidence of a recent rising of the coast.

50-6783

Clastic sediment features in the sea area adjacent to the South Shetland Islands.

Feng, Y.J., Lin, D.Q., Zhongguo diyijie Nandayang kaocha xueshu taolunhui lunwen zhuanji (China Symposium on Southern Ocean Expedition, 1st, Hangzhou, May, 1988. Proceedings), Shanghai, Kexue jishu chubanshe (Shanghai Science and Technology Publisher), 1989, p.355-365, In Chinese with English summary. 2 refs.

DLC G845.5.C45 1989 Orien China

Marine geology, Marine deposits, Bottom sediment, Glacial deposits, Ice rafting, Sediment transport, Antarctica—South Shetland Islands

Thirty-one surface samples of marine sediments were collected around the South Shetland Is. at depths from 20-110 m. Grain size and surface features of 29 samples were determined; a sediment classification, based on topography, location and field sampling records is presented. The sediment distribution in the investigated area is found to be similar to that in the middle and low latitudes; however, glacial transportation and ice rafting features are present in these sediments. They are believed to have originated mainly from the Antarctic Peninsula.

50-6784

Characteristics of marine glacial deposition surrounding the South Shetland Islands, Antarctica.

Huang, H.Y., Wang, H.Z., Wu, B.Y., Wu, Z.N., Zhang, Z.X., Ge, J.P., Zhongguo diyijie Nandayang kaocha xueshu taolunhui lunwen zhuanji (China Symposium on Southern Ocean Expedition, 1st, Hangzhou, May, 1988. Proceedings), Shanghai, Kexue jishu chubanshe (Shanghai Science and Technology Publisher), 1989, p.366-377, In Chinese with English summary. 8 refs.

DLC G845.5.C45 1989 Orien China

Marine geology, Marine deposits, Bottom sediment, Glacial geology, Glacial deposits, Ice rafting, Sediment transport, Antarctica—South Shetland Islands

Based on analysis of grain size of marine sediments and surface texture of quartz sands at the South Shetlands, their glacial and marine origin is established. To confirm this, evidence indicating glacial occurrence is described in detail, including sediment composition and surface features showing glacial striae, fissures and denuded chips caused by freezing action. Histogram curves of grain size distribution show bimodal or multimodal shapes. Evidence suggesting that the sediments have been reworked significantly by marine agents, due to active oceanic currents, is also discussed. According to geographic position, sea floor topography and the pattern and intensity of marine agents, the study area is subdivided into 3 environments showing differences in sediment properties.

50-6785

Sediment types and sedimentation of the northwestern sea area of the Antarctic Peninsula.

Lin, C.Q., Zheng, L.F., Zhongguo diyijie Nandayang kaocha xueshu taolunhui lunwen zhuanji (China Symposium on Southern Ocean Expedition, 1st, Hangzhou, May, 1988. Proceedings), Shanghai, Kexue jishu chubanshe (Shanghai Science and Technology Publisher), 1989, p.378-386, In Chinese with English summary. 3 refs.

DLC G845.5.C45 1989 Orien China

Marine geology, Marine deposits, Bottom sediment, Glacial geology, Glacial deposits, Sediment transport, Antarctica—South Shetland Islands

The classification system of glacial-marine sediment types of Harland et al (1966) and Anderson et al (1977) indicates that there are two types of sediments in the northwestern sea area of the Antarctic Peninsula: residual and compound paratills. ^{14}C dating of surface sediment samples shows that the sediments are recent. Their compositions of detrital minerals and clay coincide with the lithology of land near the study area, indicating that most sediments derive from the weathering of rocks on the west coast of the Antarctic Peninsula and the South Shetland Is. The sediment sources are mainly glacier and volcanic inputs and organisms. It is concluded that, although the sediment model is relatively simple, the factors controlling their distribution, including glaciers, current effects, volcanic extrusion and carbonate compensation depth, are very complex. (Auth. mod.)

50-6786

Sources and distribution of sulfate in the Pacific atmosphere.

Chen, L.Q., Yang, X.L., Huang, J.H., Zhongguo diyijie Nandayang kaocha xueshu taolunhui lunwen zhuanji (China Symposium on Southern Ocean Expedition, 1st, Hangzhou, May, 1988. Proceedings), Shanghai, Kexue jishu chubanshe (Shanghai Science and Technology Publisher), 1989, p.433-437, In Chinese with English summary. 31 refs.

DLC G845.5.C45 1989 Orien China

Marine atmospheres, Polar atmospheres, Atmospheric circulation, Atmospheric composition, Air pollution, Aerosols, Air water interactions, Sea water, Water chemistry, Water pollution, Antarctica—Antarctic Peninsula, —South Pacific Ocean

Thirty-one marine aerosol samples were collected during the period from Nov. 1984-Mar. 1985. The contents of sulfate and sodium in the samples were determined. The results indicate that the concentration of non-sea-salt sulfate (nss SO_4^{2-}) in marine aerosols decrease from the North Pacific to the South Pacific. A large portion of the nss sulfate in the North Pacific atmosphere comes from continental pollution sources through long-distance transport; the relatively low concentration of nss sulfate in marine aerosols over the South Pacific and the Antarctic may be attributed to an oceanic sulfate source due to marine biological processes. The sea-to-air flux of sulfur was calculated at a value of $0.065 gS/(m^2 \cdot a)$ in Antarctic Peninsula waters. (Auth.)

50-6787

Study on road surface countermeasures in winter. [Toki romen taisaku ni kansuru kenkyu]

Hokkaido Development Bureau. Civil Engineering Research Institute, *Hokkaido kaihatsukyoku gijutsu kenkyu happyokai happyo gaiyoshu (Hokkaido Development Bureau Technical Research Meeting. Presentation summaries)*, 1994(Pub. Feb.95), 38(2), p.5-24, In Japanese. 3 refs.

Road icing, Snow removal, Road maintenance, Japan—Hokkaido

50-6788

Effect of deicers on roadside trees—study on current conditions in the vicinity of Nakayama Pass on National Highway 230. [Toketsu boshizai ni yoru endo jumoku e no eikyo ni tsuite—ippan kokudo 230-go Nakayama toge fukin ni okeru genjo chosa]

Miyamoto, S., Takagi, H., Onuma, H., *Hokkaido kaihatsukyoku gijutsu kenkyu happyokai happyo gaiyoshu (Hokkaido Development Bureau Technical Research Meeting. Presentation summaries)*, 1994(Pub. Feb.95), 38(2), p.73-78, In Japanese. 12 refs.

Road icing, Chemical ice prevention, Salting, Road maintenance, Environmental impact, Soil pollution, Plant physiology, Physiological effects, Japan—Hokkaido

50-6789

Effect of the popularization of studless tires on traffic conditions. [Sutaddoresu-ka ni tomonau kotsu gensho e no eikyo ni tsuite]

Horita, N., Takagi, H., Onuma, H., *Hokkaido kaihatsukyoku gijutsu kenkyu happyokai happyo gaiyoshu (Hokkaido Development Bureau Technical Research Meeting. Presentation summaries)*, 1994(Pub. Feb.95), 38(2), p.79-86, In Japanese. 5 refs.

Road icing, Road maintenance, Highway planning, Tires, Skid resistance, Safety, Legislation, Accidents, Japan—Hokkaido

50-6790

Effect of the popularization of studless tires on the road environment. [Sutaddoresu-ka ni yoru doro kankyo e no eikyo ni tsuite]

Mima, H., Takagi, H., Horita, N., *Hokkaido kaihatsukyoku gijutsu kenkyu happyokai happyo gaiyoshu (Hokkaido Development Bureau Technical Research Meeting. Presentation summaries)*, 1994(Pub. Feb.95), 38(2), p.87-92, In Japanese. 6 refs.

Road icing, Road maintenance, Highway planning, Tires, Soil pollution, Environmental impact, Environmental protection, Legislation, Japan—Hokkaido

50-6791

Relation of traffic to climate and road icing in downtown Sapporo. [Sapporo shigaibu ni okeru toketsu romen no hassei to kisho kotsu no kankei ni tsuite]

Matsuzawa, M., Kajiya, Y., *Hokkaido kaihatsukyoku gijutsu kenkyu happyokai happyo gaiyoshu (Hokkaido Development Bureau Technical Research Meeting. Presentation summaries),* 1994(Pub. Feb.95), 38(2), p.99-104, In Japanese. 1 ref.

Road icing, Frost forecasting, Weather forecasting, Road maintenance, Urban planning, Streets, Safety, Japan—Hokkaido

50-6792

Analysis of winter skid accidents in Sapporo City and Asahikawa City. [Sapporo-shi Asahikawa-shi ni okeru toki surippu jiko no bunseki]

Nagai, T., Takagi, H., Onuma, H., *Hokkaido kaihatsukyoku gijutsu kenkyu happyokai happyo gaiyoshu (Hokkaido Development Bureau Technical Research Meeting. Presentation summaries),* 1994(Pub. Feb.95), 38(2), p.105-112, In Japanese. 3 refs.

Road icing, Tires, Skid resistance, Accidents, Safety, Road maintenance, Japan—Hokkaido

50-6793

Identifying sections of national highways in downtown Sapporo by road surface conditions. [Romen shutsugen keiko kara mita Sapporo shigaibu no kokudo no kukan wake ni tsuite]

Takahashi, K., Kajiya, Y., Matsuzawa, M., *Hokkaido kaihatsukyoku gijutsu kenkyu happyokai happyo gaiyoshu (Hokkaido Development Bureau Technical Research Meeting. Presentation summaries),* 1994(Pub. Feb.95), 38(2), p.113-118, In Japanese. 2 refs.

Road icing, Road maintenance, Highway planning, Urban planning, Weather forecasting, Safety, Japan—Hokkaido

50-6794

Study on actual conditions for pedestrian slip and fall on roads in winter and amelioration of road icing. [Tokikan rojo hoko-chu tento jittai to seppyo romen no kaizen ni kansuru kenkyu]

Takamori, M., Takagi, H., Onuma, H., *Hokkaido kaihatsukyoku gijutsu kenkyu happyokai happyo gaiyoshu (Hokkaido Development Bureau Technical Research Meeting. Presentation summaries),* 1994(Pub. Feb.95), 38(2), p.119-124, In Japanese. 7 refs.

Road icing, Snow removal, Road maintenance, Accidents, Safety, Human factors engineering, Japan—Hokkaido

50-6795

Using sand and crushed rock as road icing countermeasures. [Toketsu romen taisaku toshite no suna saiseki no shiyo ni tsuite]

Onuma, H., Miyamoto, S., Takagi, H., *Hokkaido kaihatsukyoku gijutsu kenkyu happyokai happyo gaiyoshu (Hokkaido Development Bureau Technical Research Meeting. Presentation summaries),* 1994(Pub. Feb.95), 38(2), p.125-130, In Japanese. 10 refs.

Road icing, Road maintenance, Sanding

50-6796

Warning measures for the driver to reduce speed, particularly as a winter traffic safety measure—measures on National Highway 273 in Sangoku Pass as an example. [Doraiba e no gensoku kanki taisaku o shu toshita toki kotsu anzen taisaku—ippan kokudo 273-go Sangoku toge ni okeru taisaku jirei]

Takayama, H., Matsuda, T., Hasegawa, T., *Hokkaido kaihatsukyoku gijutsu kenkyu happyokai happyo gaiyoshu (Hokkaido Development Bureau Technical Research Meeting. Presentation summaries),* 1994(Pub. Feb.95), 38(2), p.131-138, In Japanese. 3 refs.

Road icing, Warning systems, Safety, Highway planning, Japan—Hokkaido

50-6797

Current status of snow countermeasures on roads in the Soya district. [Soya chiku ni okeru doro bosetsu taisaku genjo ni tsuite]

Chiduru, Y., Osaka, H., *Hokkaido kaihatsukyoku gijutsu kenkyu happyokai happyo gaiyoshu (Hokkaido Development Bureau Technical Research Meeting. Presentation summaries),* 1994(Pub. Feb.95), 38(2), p.139-144, In Japanese. 2 refs.

Blowing snow, Snow fences, Snow hedges, Road maintenance, Highway planning, Japan—Hokkaido

50-6798

Tests on snowbreaks, windbreaks, and obstructions to visibility—wind tunnel experiments on snow countermeasures for the Asahikawa-Mombetsu stretch of the high-standard main highway. [Bosetsu bofu oyobi shitei shogai ni kansuru chosa shiken—kokikaku kansen doro Asahikawa Monbetsu jidoshado bosetsu taisaku no fudo jikken]

Sasaki, M., Takashiba, Y., *Hokkaido kaihatsukyoku gijutsu kenkyu happyokai happyo gaiyoshu (Hokkaido Development Bureau Technical Research Meeting. Presentation summaries),* 1994(Pub. Feb.95), 38(2), p.145-150, In Japanese.

Blowing snow, Snowdrifts, Snow fences, Windbreaks, Road maintenance, Visibility, Highway planning, Wind tunnels, Japan—Hokkaido

50-6799

Effect of windbreak fences for mitigating obstruction to visibility—effect of snow countermeasures in Echigo Village of Ebetsu on National Highway 12 and Bannaguro on Highway 231 as an example. [Fukidome saku ni yoru shitei shogai kanwa koka—ippan kokudo 12-go Ebetsu Echigo-mura oyobi 231-go Bannaguro ni okeru bosetsu taisaku koka o rei toshite]

Fukuzawa, Y., Ishimoto, K., Goto, Y., *Hokkaido kaihatsukyoku gijutsu kenkyu happyokai happyo gaiyoshu (Hokkaido Development Bureau Technical Research Meeting. Presentation summaries),* 1994(Pub. Feb.95), 38(2), p.151-158, In Japanese. 4 refs.

Blowing snow, Snow fences, Windbreaks, Road maintenance, Visibility, Japan—Hokkaido

50-6800

Using images from an ordinary video to estimate visibility. [Ippan bideo gazo o mochi ita shitei no suitei]

Ishimoto, K., Chiba, T., Kajiya, Y., *Hokkaido kaihatsukyoku gijutsu kenkyu happyokai happyo gaiyoshu (Hokkaido Development Bureau Technical Research Meeting. Presentation summaries),* 1994(Pub. Feb.95), 38(2), p.159-164, In Japanese.

Blowing snow, Falling snow, Snow optics, Visibility, Road maintenance

50-6801

Test to evaluate the durability of drainable admixtures for snow and cold regions—low-temperature counterblow test. [Sekisetsu kanreichi ni okeru haisuisei kongobutsu no taikyusei hyoka shiken—teion kantaburo shiken]

Toya, K., Saito, M., *Hokkaido kaihatsukyoku gijutsu kenkyu happyokai happyo gaiyoshu (Hokkaido Development Bureau Technical Research Meeting. Presentation summaries),* 1994(Pub. Feb.95), 38(2), p.201-204, In Japanese. 4 refs.

Pavements, Bitumens, Waterproofing, Frost protection, Cold weather tests, Subsurface drainage, Road maintenance

50-6802

Study on methods to restore the performance of drainable pavements. [Haisuisei hoso kino kaifuku shuho no kenkyu ni tsuite]

Abe, A., Ogasawara, A., Takeda, Y., *Hokkaido kaihatsukyoku gijutsu kenkyu happyokai happyo gaiyoshu (Hokkaido Development Bureau Technical Research Meeting. Presentation summaries),* 1994(Pub. Feb.95), 38(2), p.205-212, In Japanese. 1 ref.

Pavements, Waterproofing, Frost protection, Cold weather tests, Subsurface drainage, Road maintenance

50-6803

Evaluating the applicability of frost resistant pavements. [Toketsu yokusei hoso no kyoyosei hyoka ni tsuite]

Ninomiya, H., Ogasawara, A., Yoshino, M., *Hokkaido kaihatsukyoku gijutsu kenkyu happyokai happyo gaiyoshu (Hokkaido Development Bureau Technical Research Meeting. Presentation summaries),* 1994(Pub. Feb.95), 38(2), p.219-226, In Japanese. 2 refs.

Road icing, Pavements, Frost resistance, Frost protection, Road maintenance

50-6804

Experimental pavement for road freezing countermeasures in Sapporo City. [Sapporo-shi no toketsu romen taisaku shiken hoso]

Katayama, K., Ito, H., *Hokkaido kaihatsukyoku gijutsu kenkyu happyokai happyo gaiyoshu (Hokkaido Development Bureau Technical Research Meeting. Presentation summaries),* 1994(Pub. Feb.95), 38(2), p.227-232, In Japanese. 3 refs.

Road icing, Pavements, Frost protection, Frost resistance, Skid resistance, Road maintenance, Japan—Hokkaido

50-6805

Basic characteristics of antiskid rubber mats for roads. [Romen bokatsu-yo gomumatto no kihon seijo ni tsuite]

Yoshino, M., Ogasawara, A., Kuriyama, K., *Hokkaido kaihatsukyoku gijutsu kenkyu happyokai happyo gaiyoshu (Hokkaido Development Bureau Technical Research Meeting. Presentation summaries),* 1994(Pub. Feb.95), 38(2), p.233-236, In Japanese.

Road icing, Pavements, Skid resistance, Rubber, Road maintenance

50-6806

Mitigation and durability of icy roads with urethane filled pavement grooving. [Gurubingu uretan juten hoso no seppyo romen kaizen hyoka to taikyusei ni tsuite]

Takeda, Y., Ogasawara, A., Ninomiya, H., *Hokkaido kaihatsukyoku gijutsu kenkyu happyokai happyo gaiyoshu (Hokkaido Development Bureau Technical Research Meeting. Presentation summaries),* 1994(Pub. Feb.95), 38(2), p.237-242, In Japanese. 2 refs.

Road icing, Pavements, Protective coatings, Skid resistance, Road maintenance

50-6807

Design and manufacture of reinforced girders for the Hakucho Bridge. [Hakucho ohashi hogo geta no sekkei seisaku ni tsuite]

Endo, T., Nishimoto, S., Takahashi, T., *Hokkaido kaihatsukyoku gijutsu kenkyu happyokai happyo gaiyoshu (Hokkaido Development Bureau Technical Research Meeting. Presentation summaries),* 1994(Pub. Feb.95), 38(2), p.253-258, In Japanese.

Bridges, Steel structures, Snow loads, Wind pressure, Design criteria, Japan—Hokkaido

50-6808

Proceedings of the First Conference of Russian Geocryologists, June 3-5, 1996, Moscow State University, Volume 2. [Materialy Pervoĭ konferentsii geokriologov Rossii, 3-5 iiunia 1996 g., MGU im. M.V. Lomonosova, Kniga 2]

Konferentsiia geokriologov Rossii, 1st, Moscow State University, June 3-5, 1996, Moscow, MGU geologicheskiĭ fakul'tet, kafedra geokriologii, 1996, 483p., In Russian. Refs. passim. For individual papers see 50-6809 through 50-6858. Vol.2 contains: Part 1—Physics-chemistry and mechanics of frozen rocks; Part 2—Geocryological forecasting and geo-ecology.

Geocryology, Frozen rocks, Rock mechanics, Frozen ground mechanics, Permafrost, Global warming, Cryogenic soils, Active layer, Russia

50-6809

Study of the heat of crystallization of bound water in clay soils. [Issledovanie teploty kristallizatsii sviazannoĭ vody v glinnistykh gruntakh]

Starostin, E.G., Timofeev, A.M., Materialy Pervoĭ konferentsii geokriologov Rossii, 3-5 iiunia 1996 g., MGU im. M.V. Lomonosova, Kniga 2 (Proceedings of the First Conference of Russian Geocryologists, June 3-5, 1996, Moscow State University, Volume 2), Moscow, MGU geologicheskiĭ fakul'tet, kafedra geokriologii, 1996, p.3-8, In Russian. 10 refs.

Geocryology, Clay soils, Hygroscopic water, Ice crystal growth, Soil water, Enthalpy, Unfrozen water content, Analysis (mathematics)

50-6810

Characteristics of the crystallization of water in unsaturated soils. [Osobennosti kristallizatsii vody v vodonenasyshchennykh gruntakh]

Golubev, V.N., Materialy Pervoĭ konferentsii geokriologov Rossii, 3-5 iiunia 1996 g., MGU im. M.V. Lomonosova, Kniga 2 (Proceedings of the First Conference of Russian Geocryologists, June 3-5, 1996, Moscow State University, Volume 2), Moscow, MGU geologicheskiĭ fakul'tet, kafedra geokriologii, 1996, p.9-18, In Russian. 17 refs.

Geocryology, Threshold temperatures, Ice formation, Drops (liquids), Ice crystal growth, Analysis (mathematics), Soil freezing, Soil water

50-6811

Kinetics of the freezing of water in dispersed soils (experiment, theory). [Kinetika zamerzaniia vody v dispersnykh gruntakh (eksperiment, teoriia)]

Grechishchev, S.E., Pavlov, A., Ponomarev, V.V., Materialy Pervoĭ konferentsii geokriologov Rossii, 3-5 iiunia 1996 g., MGU im. M.V. Lomonosova, Kniga 2 (Proceedings of the First Conference of Russian Geocryologists, June 3-5, 1996, Moscow State University, Volume 2), Moscow, MGU geologicheskiĭ fakul'tet, kafedra geokriologii, 1996, p.19-31, In Russian. 8 refs.

Geocryology, Soil water, Ice formation, Frozen ground thermodynamics, Analysis (mathematics), Phase transformations, Ice crystal growth, Soil freezing, Threshold temperatures

50-6812

Parameters of the phase equilibrium of soil water and their effect on dynamics of the cryolithosphere. [Parametry fazovogo ravnovesiia gruntovoĭ vlagi i ikh vliianie na dinamiku kriolitosfery]

Konovalov, A.A., Materialy Pervoĭ konferentsii geokriologov Rossii, 3-5 iiunia 1996 g., MGU im. M.V. Lomonosova, Kniga 2 (Proceedings of the First Conference of Russian Geocryologists, June 3-5, 1996, Moscow State University, Volume 2), Moscow, MGU geologicheskiĭ fakul'tet, kafedra geokriologii, 1996, p.32-40, In Russian. 8 refs.

Geocryology, Phase transformations, Soil water, Analysis (mathematics), Ice crystal growth, Saline soils, Unfrozen water content, Soil freezing, Salinity, Temperature effects

50-6813

Modelling of ice formation processes in freezing soils. [Modelirovanie protsessa l'doobrazovaniia v promerzaiushchikh gruntakh]

Gorelik, IA.B., Kolunin, V.S., Materialy Pervoĭ konferentsii geokriologov Rossii, 3-5 iiunia 1996 g., MGU im. M.V. Lomonosova, Kniga 2 (Proceedings of the First Conference of Russian Geocryologists, June 3-5, 1996, Moscow State University, Volume 2), Moscow, MGU geologicheskiĭ fakul'tet, kafedra geokriologii, 1996, p.41-52, In Russian. 15 refs.

Mathematical models, Ice formation, Soil freezing, Soil water, Deformation, Frost heave, Frozen ground mechanics

50-6814

Experimental studies of frost heave in soils subjected to external stress. [Eksperimental'nye issledovaniia moroznogo pucheniia gruntov pri vozdeĭstvii vneshneĭ nagruzki]

Lavrov, S.A., Kaliuzhnyĭ, I.L., Materialy Pervoĭ konferentsii geokriologov Rossii, 3-5 iiunia 1996 g., MGU im. M.V. Lomonosova, Kniga 2 (Proceedings of the First Conference of Russian Geocryologists, June 3-5, 1996, Moscow State University, Volume 2), Moscow, MGU geologicheskiĭ fakul'tet, kafedra geokriologii, 1996, p.53-63, In Russian.

Frost heave, Ice lenses, Frozen ground thermodynamics, Active layer, Stresses

50-6815

On freezing and cryogenic heave of finely dispersed soil, considering moisture migration into the frozen zone. [Zadacha o promerzanii i kriogennom puchenii tonkodispersnykh gruntov s uchetom migratsii vlagi v merzloĭ zone]

Buldovich, S.N., Materialy Pervoĭ konferentsii geokriologov Rossii, 3-5 iiunia 1996 g., MGU im. M.V. Lomonosova, Kniga 2 (Proceedings of the First Conference of Russian Geocryologists, June 3-5, 1996, Moscow State University, Volume 2), Moscow, MGU geologicheskiĭ fakul'tet, kafedra geokriologii, 1996, p.64-73, In Russian. 2 refs.

Soil freezing, Frost heave, Frozen fines, Soil water migration, Mathematical models, Frozen ground mechanics

50-6816

Review of solution methods to the problem of heat-mass transfer during freezing and thawing. [Obzor metodov resheniia zadach teplo-massoperenosa pri promerzanii-ottaivanii]

Komarov, I.A., Materialy Pervoĭ konferentsii geokriologov Rossii, 3-5 iiunia 1996 g., MGU im. M.V. Lomonosova, Kniga 2 (Proceedings of the First Conference of Russian Geocryologists, June 3-5, 1996, Moscow State University, Volume 2), Moscow, MGU geologicheskiĭ fakul'tet, kafedra geokriologii, 1996, p.74-90, In Russian. 54 refs.

Heat transfer, Mass transfer, Analysis (mathematics), Heat balance, Geocryology, Mathematical models, Freeze thaw cycles

50-6817

Phenomenological approach to the analysis of moisture transfer in the aeration zone of the cryolithosphere (in the example of Central Yakutia). [O fenomenologicheskom podkhode k otsenke vlagoperenosa v zone aeratsii kriolitosfery (na primere Tsentral'noĭ IAkutii)]

Shepelev, V.V., Materialy Pervoĭ konferentsii geokriologov Rossii, 3-5 iiunia 1996 g., MGU im. M.V. Lomonosova, Kniga 2 (Proceedings of the First Conference of Russian Geocryologists, June 3-5, 1996, Moscow State University, Volume 2), Moscow, MGU geologicheskiĭ fakul'tet, kafedra geokriologii, 1996, p.91-100, In Russian. 9 refs.

Geocryology, Moisture transfer, Analysis (mathematics), Aeration, Soil water migration, Geothermometry, Russia—Yakutia

50-6818

Model for calculating the heat transfer coefficient for sedimentary rocks. [Model' dlia rascheta koeffitsienta teploprovodnosti osadochnykh gornykh porod]

Gavril'ev, R.I., Materialy Pervoĭ konferentsii geokriologov Rossii, 3-5 iiunia 1996 g., MGU im. M.V. Lomonosova, Kniga 2 (Proceedings of the First Conference of Russian Geocryologists, June 3-5, 1996, Moscow State University, Volume 2), Moscow, MGU geologicheskiĭ fakul'tet, kafedra geokriologii, 1996, p.101-111, In Russian. 12 refs.

Geocryology, Rock properties, Heat transfer coefficient, Mathematical models, Russia—Siberia

50-6819

General principles in studying the interaction of physical-mechanical and physical-chemical properties of frozen ground. [Obshchie printsipy issledovaniia vzaimosviazi fiziko-mekhanicheskikh i fiziko-khimicheskikh svoĭstv merzlykh gruntov]

Kozhevnikov, N.N., Materialy Pervoĭ konferentsii geokriologov Rossii, 3-5 iiunia 1996 g., MGU im. M.V. Lomonosova, Kniga 2 (Proceedings of the First Conference of Russian Geocryologists, June 3-5, 1996, Moscow State University, Volume 2), Moscow, MGU geologicheskiĭ fakul'tet, kafedra geokriologii, 1996, p.112-115, In Russian. 5 refs.

Geocryology, Frozen ground chemistry, Frozen ground mechanics, Frozen ground physics, Frozen ground thermodynamics

50-6820

Migration of chemical elements in frozen rocks. [Migratsiia khimicheskikh elementov v merzlykh porodakh]

Chuvilin, E.M., Smirnova, O.G., Materialy Pervoĭ konferentsii geokriologov Rossii, 3-5 iiunia 1996 g., MGU im. M.V. Lomonosova, Kniga 2 (Proceedings of the First Conference of Russian Geocryologists, June 3-5, 1996, Moscow State University, Volume 2), Moscow, MGU geologicheskiĭ fakul'tet, kafedra geokriologii, 1996, p.116-129, In Russian. 11 refs.

Geocryology, Cryogenic soils, Ions, Mass transfer, Moisture transfer, Ion density (concentration), Clay soils, Frozen rocks, Temperature effects, Salinity, Rock mechanics

50-6821

Moisture transfer, water-soluble substances and structural transformation during the freezing of natural dispersed systems. [Perenos vlagi, vodorastvorimykh soedineniĭ i preobrazovanie struktury pri promerzanii prirodnykh dispersnykh sistem]

Brovka, G.P., Dediulia, I.V., Murashko, A.A., Sychevskiĭ, V.A., Materialy Pervoĭ konferentsii geokriologov Rossii, 3-5 iiunia 1996 g., MGU im. M.V. Lomonosova, Kniga 2 (Proceedings of the First Conference of Russian Geocryologists, June 3-5, 1996, Moscow State University, Volume 2), Moscow, MGU geologicheskiĭ fakul'tet, kafedra geokriologii, 1996, p.130-139, In Russian. 4 refs.

Geocryology, Moisture transfer, Transformations, Freezing, Frozen rocks, Frost heave, Heat transfer coefficient, Cryogenic structures, Freezing points, Admixtures, Sapropel, Russia

50-6822

Characteristics of the distribution of absorbed ions in syncryogenic and epicryogenic rocks. [Osobennosti raspredeleniia pogloshchennykh ionov v sinkriogennykh i epikriogennykh porodakh]

Ostroumov, V.E., Materialy Pervoĭ konferentsii geokriologov Rossii, 3-5 iiunia 1996 g., MGU im. M.V. Lomonosova, Kniga 2 (Proceedings of the First Conference of Russian Geocryologists, June 3-5, 1996, Moscow State University, Volume 2), Moscow, MGU geologicheskiĭ fakul'tet, kafedra geokriologii, 1996, p.140-152, In Russian. 22 refs.

Geocryology, Frozen rocks, Ion density (concentration), Rock mechanics

50-6823

Experimental studies of the interaction of oil with cryogenic rocks. [Eksperimental'nye issledovaniia vzaimodeĭstviia nefti s kriogennymi porodami]

Ershov, E.D., Chuvilin, E.M., Smirnova, O.G., Naletova, N.S., Materialy Pervoĭ konferentsii geokriologov Rossii, 3-5 iiunia 1996 g., MGU im. M.V. Lomonosova, Kniga 2 (Proceedings of the First Conference of Russian Geocryologists, June 3-5, 1996, Moscow State University, Volume 2), Moscow, MGU geologicheskiĭ fakul'tet, kafedra geokriologii, 1996, p.153-159, In Russian. 9 refs.

Geocryology, Frozen rocks, Crude oil, Unfrozen water content, Environmental protection, Rock mechanics, Temperature effects, Loams, Sands, Frozen ground mechanics, Porosity, Permeability

50-6824

Perennially frozen rock as a medium for burying highly concentrated industrial wastes (in the example of the northern Siberian platform). [Mnogoletnemerzlye porody kak ob"ekt dlia zakhoroneniia vysokokontsentrirovannykh promstokov (na primere severa Sibirskoĭ platformy)]

Borisov, V.N., Alekseev, S.V., Materialy Pervoĭ konferentsii geokriologov Rossii, 3-5 iiunia 1996 g., MGU im. M.V. Lomonosova, Kniga 2 (Proceedings of the First Conference of Russian Geocryologists, June 3-5, 1996, Moscow State University, Volume 2), Moscow, MGU geologicheskiĭ fakul'tet, kafedra geokriologii, 1996, p.160-169, In Russian. 15 refs.

Geocryology, Waste disposal, Frozen rocks, Rock mechanics, Permafrost, Brines, Frozen rock temperature, Hydrogeology, Hydrogeochemistry, Russia—Siberia

50-6825

Strength and viscosity of ice. [Prochnost' i viazkost' l'da]

Zaretskiĭ, IU.K., Fish, A.M., MP 3888, Materialy Pervoĭ konferentsii geokriologov Rossii, 3-5 iiunia 1996 g., MGU im. M.V. Lomonosova, Kniga 2 (Proceedings of the First Conference of Russian Geocryologists, June 3-5, 1996, Moscow State University, Volume 2), Moscow, MGU geologicheskiĭ fakul'tet, kafedra geokriologii, 1996, p.170-182, In Russian.

Geocryology, Ice strength, Viscosity, Temperature effects, Stress strain diagrams, Ice plasticity, Ice deformation, Shear strength, Ice mechanics

50-6826

Physical-chemical fundamentals of strength of frozen saline soils. [Fiziko-khimicheskie osnovy prochnosti merzlykh zasolennykh gruntov]

Roman, L.T., Svintitskaia, L.F., Sheĭkin, I.V., Aksenov, V.I., Materialy Pervoĭ konferentsii geokriologov Rossii, 3-5 iiunia 1996 g., MGU im. M.V. Lomonosova, Kniga 2 (Proceedings of the First Conference of Russian Geocryologists, June 3-5, 1996, Moscow State University, Volume 2), Moscow, MGU geologicheskiĭ fakul'tet, kafedra geokriologii, 1996, p.183-192, In Russian. 9 refs.

Geocryology, Saline soils, Frozen ground chemistry, Frozen ground physics, Frozen ground strength, Freezing points, Salinity, Loams, Unfrozen water content

50-6827

Basic processes determining the rheological behavior of plastic-frozen ground under stress. [Nekotorye osnovnye protsessy, opredeliaiushchie reologicheskoe povedenie plastichno-merzlykh gruntov pod nagruzkoĭ]

Ukhov, S.B., Vlasov, A.N., Lisin, L.D., Merzliakov, V.P., Savatorova, V.L., Talonov, A.V., Materialy Pervoĭ konferentsii geokriologov Rossii, 3-5 iiunia 1996 g., MGU im. M.V. Lomonosova, Kniga 2 (Proceedings of the First Conference of Russian Geocryologists, June 3-5, 1996, Moscow State University, Volume 2), Moscow, MGU geologicheskiĭ fakul'tet, kafedra geokriologii, 1996, p.193-204, In Russian. 6 refs.

Geocryology, Frozen ground mechanics, Temperature effects, Rheology, Stefan problem, Ice melting, Mathematical models, Phase transformations, Plastic properties, Frozen ground compression

50-6828

Uniaxial compressive strength of frozen ground at low subzero temperatures. [Prochnost' na odnoosnoe szhatie merzlykh porod pri nizkikh otritsatel'nykh temperaturakh]

Ershov, E.D., Brushkov, A.V., Kuleshov, IU.V., Smirnov, I.S., Materialy Pervoĭ konferentsii geokriologov Rossii, 3-5 iiunia 1996 g., MGU im. M.V. Lomonosova, Kniga 2 (Proceedings of the First Conference of Russian Geocryologists, June 3-5, 1996, Moscow State University, Volume 2), Moscow, MGU geologicheskiĭ fakul'tet, kafedra geokriologii, 1996, p.205-213, In Russian. 12 refs.

Geocryology, Frozen ground compression, Frozen ground strength, Temperature effects, Low temperature tests, Ice crystals

50-6829

Deformation properties of saline frozen rocks. [Deformatsionnye svoĭstva zasolennykh merzlykh porod]

Brushkov, A.V., Materialy Pervoĭ konferentsii geokriologov Rossii, 3-5 iiunia 1996 g., MGU im. M.V. Lomonosova, Kniga 2 (Proceedings of the First Conference of Russian Geocryologists, June 3-5, 1996, Moscow State University, Volume 2), Moscow, MGU geologicheskiĭ fakul'tet, kafedra geokriologii, 1996, p.214-223, In Russian. 5 refs.

Geocryology, Frozen rocks, Permafrost, Salinity, Deformation, Saline soils, Frozen ground mechanics, Static loads, Unfrozen water content, Temperature effects, Frozen rock strength, Russia

50-6830

Methodological prerequisites for using time analogy methods in frozen ground mechanics. [Metodicheskie predposylki ispol'zovaniia vremennykh analogii v mekhanike merzlykh gruntov]

Roman, L.T., Volokhov, S.S., Tsyrendorzhieva, M.D., Materialy Pervoĭ konferentsii geokriologov Rossii, 3-5 iiunia 1996 g., MGU im. M.V. Lomonosova, Kniga 2 (Proceedings of the First Conference of Russian Geocryologists, June 3-5, 1996, Moscow State University, Volume 2), Moscow, MGU geologicheskiĭ fakul'tet, kafedra geokriologii, 1996, p.224-235, In Russian. 4 refs.

Geocryology, Frozen ground mechanics, Deformation, Frozen ground strength, Frozen ground compression, Shear stress, Forecasting, Loads (forces)

50-6831

Solution to the problem of filtering consolidation of ground during the process of pre-construction thawing. [Reshenie zadachi fil'tratsionnoĭ konsolidatsii gruntov v protsesse predpostroechnogo ottaivaniia]

Barsegian, R.M., Khilimoniuk, V.Z., Materialy Pervoĭ konferentsii geokriologov Rossii, 3-5 iiunia 1996 g., MGU im. M.V. Lomonosova, Kniga 2 (Proceedings of the First Conference of Russian Geocryologists, June 3-5, 1996, Moscow State University, Volume 2), Moscow, MGU geologicheskiĭ fakul'tet, kafedra geokriologii, 1996, p.236-245, In Russian. 7 refs.

Geocryology, Frozen ground compression, Ground thawing, Stefan problem, Mathematical models, Analysis (mathematics), Seepage, Cold weather construction, Frozen ground temperature, Thermal regime

50-6832

Deformation of frozen sandy soils with a cloddy structure during thawing. [Deformirovanie merzlykh peschanykh gruntov komkovatogo slozheniia pri ottaivanii]

Shevchenko, L.V., Volokhov, S.S., Guseĭnova, E., Materialy Pervoĭ konferentsii geokriologov Rossii, 3-5 iiunia 1996 g., MGU im. M.V. Lomonosova, Kniga 2 (Proceedings of the First Conference of Russian Geocryologists, June 3-5, 1996, Moscow State University, Volume 2), Moscow, MGU geologicheskiĭ fakul'tet, kafedra geokriologii, 1996, p.246-252, In Russian.

Geocryology, Sands, Frozen ground mechanics, Ground thawing, Deformation, Moisture, Frozen ground compression, Snow cover effect, Russia—Yamal Peninsula

50-6833

Integrated geophysical and laboratory methods for studying the mechanical characteristics of permafrost in the Yamal Peninsula. [Kompleks geofizicheskikh i laboratornykh metodov issledovaniia fiziko-mekhanicheskikh kharakteristik vechnomerzlykh gruntov na poluostrove IAmal]

Mamzelev, A.P., Materialy Pervoĭ konferentsii geokriologov Rossii, 3-5 iiunia 1996 g., MGU im. M.V. Lomonosova, Kniga 2 (Proceedings of the First Conference of Russian Geocryologists, June 3-5, 1996, Moscow State University, Volume 2), Moscow, MGU geologicheskiĭ fakul'tet, kafedra geokriologii, 1996, p.253-262, In Russian.

Geocryology, Geophysical surveys, Laboratory techniques, Permafrost physics, Frozen ground mechanics, Engineering geology, Radioactive isotopes, Temperature measurement, Boreholes, Russia—Yamal Peninsula

50-6834

Developing methods for forecasting seismic effects under cryolithozone conditions. [Razvitie metodov prognoza seĭsmicheskikh vozdeĭstviĭ v usloviiakh kriolitozony]

Dzhurik, V.I., Drennov, A.F., Basov, A.D., Materialy Pervoĭ konferentsii geokriologov Rossii, 3-5 iiunia 1996 g., MGU im. M.V. Lomonosova, Kniga 2 (Proceedings of the First Conference of Russian Geocryologists, June 3-5, 1996, Moscow State University, Volume 2), Moscow, MGU geologicheskiĭ fakul'tet, kafedra geokriologii, 1996, p.263-270, In Russian. 5 refs.

Geocryology, Forecasting, Earthquakes, Mathematical models, Models, Frozen ground, Foundations, Permafrost bases, Seismic reflection, Russia—Yakutia

50-6835

Dielectric moisture measurement of frozen ground. [Dielektricheskaia vlagometriia merzlykh gruntov]

Frolov, A.D., Materialy Pervoĭ konferentsii geokriologov Rossii, 3-5 iiunia 1996 g., MGU im. M.V. Lomonosova, Kniga 2 (Proceedings of the First Conference of Russian Geocryologists, June 3-5, 1996, Moscow State University, Volume 2), Moscow, MGU geologicheskiĭ fakul'tet, kafedra geokriologii, 1996, p.271-279, In Russian. 18 refs.

Geocryology, Dielectric properties, Frozen ground physics, Moisture, Mathematical models, Water content, Liquid phases, Temperature gradients, Measurement

50-6836

Instrument systems for studying the structure of frozen ground during its deformation. [Pribornye kompleksy dlia issledovaniia struktury merzlykh gruntov v protsesse ikh deformirovaniia]

Erbiagin, I.F., Materialy Pervoĭ konferentsii geokriologov Rossii, 3-5 iiunia 1996 g., MGU im. M.V. Lomonosova, Kniga 2 (Proceedings of the First Conference of Russian Geocryologists, June 3-5, 1996, Moscow State University, Volume 2), Moscow, MGU geologicheskiĭ fakul'tet, kafedra geokriologii, 1996, p.280-286, In Russian. 6 refs.

Geocryology, Frozen ground mechanics, Deformation, Soil structure, Dynamometers, Indicating instruments

50-6837

Results of experimental studies on the phase composition of moisture in saline frozen ground. [Rezul'taty eksperimental'nykh issledovaniĭ fazovogo sostava vlagi zasolennykh merzlykh gruntov]

Motenko, R.G., Komarov, I.A., Materialy Pervoĭ konferentsii geokriologov Rossii, 3-5 iiunia 1996 g., MGU im. M.V. Lomonosova, Kniga 2 (Proceedings of the First Conference of Russian Geocryologists, June 3-5, 1996, Moscow State University, Volume 2), Moscow, MGU geologicheskiĭ fakul'tet, kafedra geokriologii, 1996, p.287-291, In Russian. 5 refs.

Geocryology, Phase transformations, Moisture, Saline soils, Frozen ground, Unfrozen water content, Temperature effects, Salinity

50-6838

Integrated method of determining the surface boundary conditions for the purpose of geocryological forecasting (for geological and historical periods of time). [Kompleksnaia metodika opredeleniia verkhnikh granichnykh usloviĭ dlia tseleĭ geokriologicheskogo prognoza (na geologicheskie i istoricheskie otrezki vremeni)]

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Geocryology, Forecasting, Paleoclimatology, Climatic changes, Temperature variations, Analysis (mathematics), Russia

50-6839

Scenarios of changes in the cryolithozone in Russia under global climatic warming. [Stsenarii izmeneniia kriolitozony Rossii pri global'nom poteplenii klimata]

Velichko, A.A., Nechaev, V.P., Materialy Pervoĭ konferentsii geokriologov Rossii, 3-5 iiunia 1996 g., MGU im. M.V. Lomonosova, Kniga 2 (Proceedings of the First Conference of Russian Geocryologists, June 3-5, 1996, Moscow State University, Volume 2), Moscow, MGU geologicheskiĭ fakul'tet, kafedra geokriologii, 1996, p.309-318, In Russian. 10 refs.

Geocryology, Global change, Climatic changes, Global warming, Models, Russia

50-6840

Degradation of the cryolithozone in Russia under global climatic warming. [Degradatsiia kriolitozony Rossii pri global'nom poteplenii klimata]

Ershov, E.D., Kozlov, A.N., Parmuzin, S.IU., Chepurnov, M.B., Materialy Pervoĭ konferentsii geokriologov Rossii, 3-5 iiunia 1996 g., MGU im. M.V. Lomonosova, Kniga 2 (Proceedings of the First Conference of Russian Geocryologists, June 3-5, 1996, Moscow State University, Volume 2), Moscow, MGU geologicheskiĭ fakul'tet, kafedra geokriologii, 1996, p.319-328, In Russian. 12 refs.

Geocryology, Global warming, Climatic changes, Global change, Ground thawing, Permafrost distribution, Frozen ground temperature, Thaw depth, Forecasting, Permafrost thermal properties, Russia

50-6841

Tien Shan: trends of changes in the geocryological conditions. [Tian'-Shan': tendentsiia izmeneniia geokriologicheskoĭ obstanovki]

Gorbunov, A.P., Severskiĭ, E.V., Titkov, S.N., Materialy Pervoĭ konferentsii geokriologov Rossii, 3-5 iiunia 1996 g., MGU im. M.V. Lomonosova, Kniga 2 (Proceedings of the First Conference of Russian Geocryologists, June 3-5, 1996, Moscow State University, Volume 2), Moscow, MGU geologicheskiĭ fakul'tet, kafedra geokriologii, 1996, p.329-335, In Russian. 2 refs.

Geocryology, Thaw depth, Frozen rock temperature, Rock glaciers, Solifluction, Climatic changes, Global warming, Stream flow, Meltwater, Glacial rivers, Glacial hydrology, Kazakhstan—Zailiyskiy Alatau, Russia—Tien Shan, Pamir-Alay

50-6842

Plan for a regional ecological atlas of the cryolithozone (in the example of Yakutia). [Proekt regional'nogo ekologicheskogo atlasa kriolitozony (na primere IAkutii)]

Alekseev, V.R., Arkhipov, V.I., Kamenskiĭ, R.M., Materialy Pervoĭ konferentsii geokriologov Rossii, 3-5 iiunia 1996 g., MGU im. M.V. Lomonosova, Kniga 2 (Proceedings of the First Conference of Russian Geocryologists, June 3-5, 1996, Moscow State University, Volume 2), Moscow, MGU geologicheskiĭ fakul'tet, kafedra geokriologii, 1996, p.336-347, In Russian. 33 refs.

Geocryology, Maps, Ecology, Research projects, Russia—Yakutia

50-6843

Formation of the cryo-ecological segment in Central Yakutia. [Formirovanie krioekologicheskoĭ napriazhennosti v landshaftakh Tsentral'noĭ IAkutii]

Fedorov, A.N., Materialy Pervoĭ konferentsii geokriologov Rossii, 3-5 iiunia 1996 g., MGU im. M.V. Lomonosova, Kniga 2 (Proceedings of the First Conference of Russian Geocryologists, June 3-5, 1996, Moscow State University, Volume 2), Moscow, MGU geologicheskiĭ fakul'tet, kafedra geokriologii, 1996, p.348-355, In Russian. 13 refs.

Geocryology, Ecology, Active layer, Soil temperature, Thaw depth, Air temperature, Precipitation (meteorology), Global warming, Climatic changes, Arctic landscapes, Russia—Yakutia

50-6844

System of parameters for the cryogenic-ecological state of the soil under cryolithozone conditions (Yakutia). [Sistema parametrov merzlotno-ekologicheskogo sostoianiia zemel' v usloviiakh kriolitozony (IAkutii)]

Gavril'ev, P.P., Ugarov, I.S., Efremov, P.V., Materialy Pervoĭ konferentsii geokriologov Rossii, 3-5 iiunia 1996 g., MGU im. M.V. Lomonosova, Kniga 2 (Proceedings of the First Conference of Russian Geocryologists, June 3-5, 1996, Moscow State University, Volume 2), Moscow, MGU geologicheskiĭ fakul'tet, kafedra geokriologii, 1996, p.356-365, In Russian. 16 refs.

Geocryology, Ecology, Cryogenic soils, Sands, Loams, Peat, Thaw depth, Seasonal freeze thaw, Soil erosion, Suprapermafrost ground water, Ground ice, Russia—Yakutia

50-6845

Problems in engineering-ecology safety during the construction and operation of oil and gas production facilities in Yakutia. [Problemy inzhenerno-ekologicheskogo obespecheniia pri stroitel'stve i ekspluatatsii ob"ektov neftegazodobychi v IAkutii]

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Geocryology, Engineering geology, Ecology, Environmental protection, Environmental impact, Safety, Petroleum industry, Gas production, Cold weather construction, Cold weather operation, Gas pipelines, Frozen ground temperature, Russia—Yakutia

50-6846

Cryogenic-ecological assessment of the condition of terrain as a result of anthropogenic activities. [Merzlotno-ekologicheskaia otsenka sostoianiia landshaftov v rezul'tate antropogennykh vozdeĭstviĭ]

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Geocryology, Ecology, Arctic landscapes, Environmental impact, Tundra terrain, Taiga, Natural resources, Thaw depth, Frozen ground temperature, Protective vegetation, Russia—Siberia, Russia—Yenisey River

50-6847

Ecological problems in the cryogenic-hydrogeological conditions in northwestern Siberia (in the example of the city of Novyy Urengoy). [Ekologicheskie problemy merzlotno-gidrogeologicheskikh usloviĭ severa Zapadnoĭ Sibiri (na primere goroda Novyĭ Urengoĭ]

Petrova, R.G., Polshkov, E.A., Polshkova, I.N., Shabanov, S.I., Materialy Pervoĭ konferentsii geokriologov Rossii, 3-5 iiunia 1996 g., MGU im. M.V. Lomonosova, Kniga 2 (Proceedings of the First Conference of Russian Geocryologists, June 3-5, 1996, Moscow State University, Volume 2), Moscow, MGU geologicheskiĭ fakul'tet, kafedra geokriologii, 1996, p.384-389, In Russian. 3 refs.

Geocryology, Ecology, Hydrogeology, Ground water, Mathematical models, Water pollution, Environmental impact, Water supply, Mass transfer, Environmental protection, Russia—Siberia

50-6848

Migration of chemical elements and ions in the seasonal thaw layer and upper layer of perennially frozen rocks in relation to thermodenudation processes on the Yamal Peninsula. [Migratsiia khimicheskikh elementov i ionov v sezonnotalom sloe i verkhnem gorizonte mnogoletnemerzlykh porod v sviazi s protsessami termodenudatsii na IAmale]

Leĭbman, M.O., Streletskaia, I.D., Materialy Pervoĭ konferentsii geokriologov Rossii, 3-5 iiunia 1996 g., MGU im. M.V. Lomonosova, Kniga 2 (Proceedings of the First Conference of Russian Geocryologists, June 3-5, 1996, Moscow State University, Volume 2), Moscow, MGU geologicheskiĭ fakul'tet, kafedra geokriologii, 1996, p.390-398, In Russian. 4 refs.

Geocryology, Active layer, Permafrost, Frozen rocks, Degradation, Erosion, Pollution, Thaw depth, Migration, Ice composition, Ion diffusion, Permafrost preservation, Russia—Yamal Peninsula

50-6849

Effect of the laying of gas pipelines on the geosystem of the cryolithozone in Western Siberia. [Vliianie prokladki gazoprovodov na geosistemy kriolitozony Zapadnoĭ Sibiri]

Moskalenko, N.G., Materialy Pervoĭ konferentsii geokriologov Rossii, 3-5 iiunia 1996 g., MGU im. M.V. Lomonosova, Kniga 2 (Proceedings of the First Conference of Russian Geocryologists, June 3-5, 1996, Moscow State University, Volume 2), Moscow, MGU geologicheskiĭ fakul'tet, kafedra geokriologii, 1996, p.399-407, In Russian. 6 refs.

Geocryology, Environmental impact, Ecosystems, Gas pipelines, Cold weather construction, Frozen rock temperature, Snow depth, Active layer, Frost mounds, Russia—Siberia

50-6850

Geological specifics and current trends in the natural and technogenic dynamics of the cryolithozone in the western European subarctic. [Geologicheskaia spetsifika i sovremennye tendentsii prirodnoĭ i tekhnogennoĭ dinamiki kriolitozony Vostochno-Evropeĭskoĭ Subarktiki]

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Geocryology, Subarctic landscapes, Ecology, Geochemistry, Terraces, Ground water, Salinity, Permafrost, Environmental impact, Frozen rock temperature, Water pollution, Russia

50-6851

Determining the geo-ecological stability of the natural-territorial complex of the cryolithozone in the Bol'shezemel'skaya Tundra. [Opredelenie geoekologicheskoĭ ustoĭchivosti PTK kriolitozony Bol'shezemel'skoĭ tundry]

Osadchaia, G.G., Kirikova, N.S., Materialy Pervoĭ konferentsii geokriologov Rossii, 3-5 iiunia 1996 g., MGU im. M.V. Lomonosova, Kniga 2 (Proceedings of the First Conference of Russian Geocryologists, June 3-5, 1996, Moscow State University, Volume 2), Moscow, MGU geologicheskiĭ fakul'tet, kafedra geokriologii, 1996, p.418-424, In Russian. 9 refs.

Geocryology, Ecology, Tundra, Frozen rocks, Environmental impact, Forecasting, Russia—Bol'shezemel'skaya Tundra

50-6852

Technogenic dynamics of oil field terrain in the cryolithozone. [Tekhnogennaia dinamika landshaftov neftianogo mestorozhdeniia v kriolitozone]

Popkov, O.N., Materialy Pervoĭ konferentsii geokriologov Rossii, 3-5 iiunia 1996 g., MGU im. M.V. Lomonosova, Kniga 2 (Proceedings of the First Conference of Russian Geocryologists, June 3-5, 1996, Moscow State University, Volume 2), Moscow, MGU geologicheskiĭ fakul'tet, kafedra geokriologii, 1996, p.425-434, In Russian.

Geocryology, Petroleum industry, Environmental impact, Forecasting, Russia

50-6853

Intermittent trends of changes in the concentration of industrial air pollutants in peat bogs in the cryolithozone of the western European territory of Russia. [Vremennye tendentsii izmeneniia kontsentratsiĭ aerotekhnogennykh polliutantov v torfianikakh kriolitozony Severo-Vostoka Evropeĭskoĭ territorii Rossii]

Evseev, A.V., Krasovskaia, T.M., Materialy Pervoĭ konferentsii geokriologov Rossii, 3-5 iiunia 1996 g., MGU im. M.V. Lomonosova, Kniga 2 (Proceedings of the First Conference of Russian Geocryologists, June 3-5, 1996, Moscow State University, Volume 2), Moscow, MGU geologicheskiĭ fakul'tet, kafedra geokriologii, 1996, p.435-442, In Russian. 3 refs.

Geocryology, Pollution, Environmental impact, Peat, Swamps, Chemical composition, Geochemistry, Russia—Bolvanskiy Nos, Russia—Arkhangel'sk, Russia—Vorkuta

50-6854

Technogenic naled formation around the city of Anadyr'. [Tekhnogennoe naledeobrazovanie na territorii g. Anadyria]

Kotov, A.N., Materialy Pervoĭ konferentsii geokriologov Rossii, 3-5 iiunia 1996 g., MGU im. M.V. Lomonosova, Kniga 2 (Proceedings of the First Conference of Russian Geocryologists, June 3-5, 1996, Moscow State University, Volume 2), Moscow, MGU geologicheskiĭ fakul'tet, kafedra geokriologii, 1996, p.443-448, In Russian. 10 refs.

Geocryology, Naleds, Icing, Ice composition, Ecology, Environmental impact, Ice formation, Ground water, Surface waters, Taliks, Pollution, Ground thawing, Russia—Anadyr', Russia—Chukotskiy Peninsula

50-6855

Prospects for using geochemical methods in forecasting and evaluating technogenic talik zones. [Perspektivy ispol'zovaniia geokhimicheskikh metodov v prognoze i otsenke tekhnogennykh talikovykh zon]

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Geocryology, Permafrost, Forecasting, Taliks, Geochemistry, Engineering geology, Ground thawing, Deformation, Russia—Chukotskiy Peninsula

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